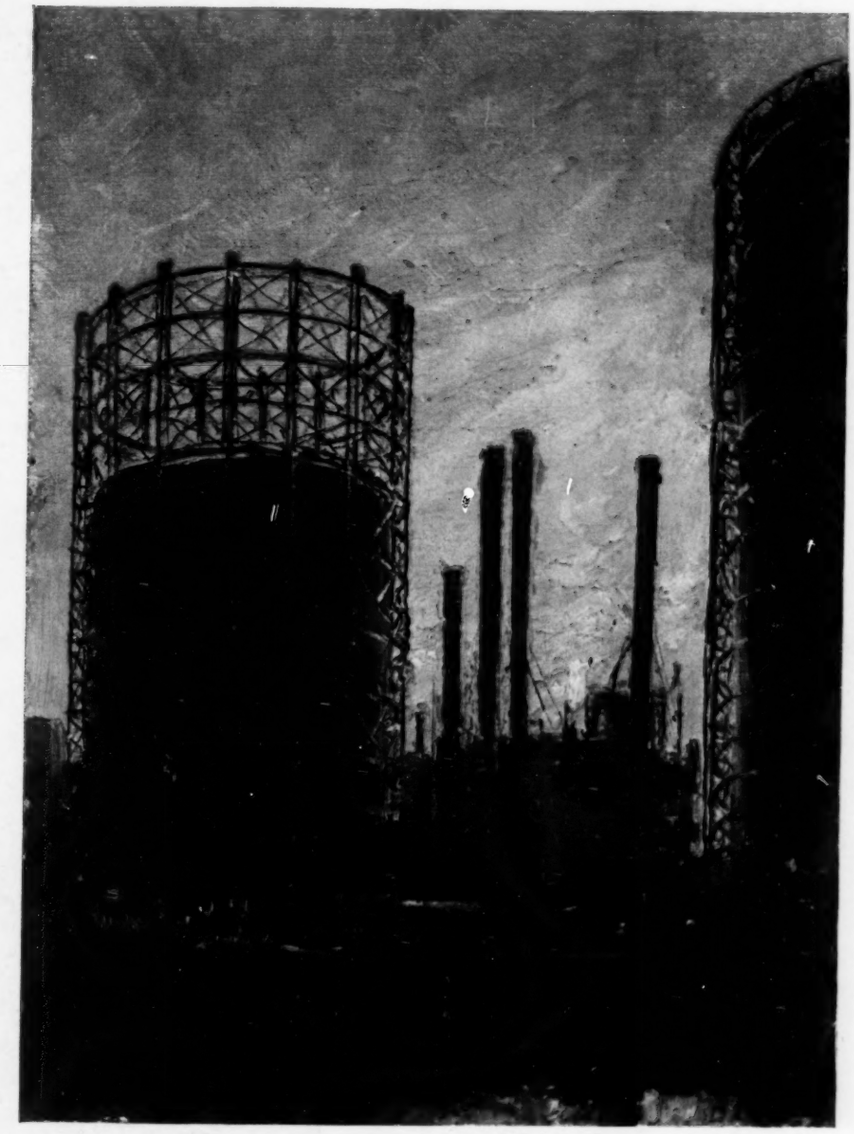
WESTERN GAS

vember
1927

20 Cents
the Copy



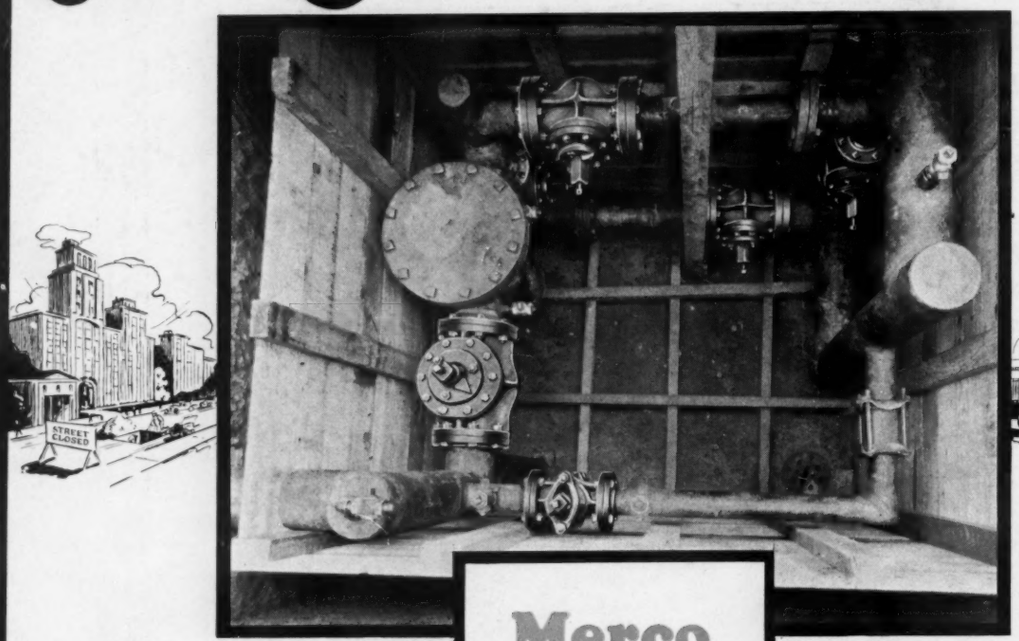
Courtesy Los Angeles Times

THE STRONGHOLD OF AN INDUSTRIAL GIANT

From a painting by Arthur B. Dodge

A MONTHLY JOURNAL DEVOTED TO THE
WESTERN GAS & APPLIANCE INDUSTRIES

The safe valves for governor pits



Merco Nordstrom Valves

Won't Leak

Won't Stick

Operate under high or low pressure.

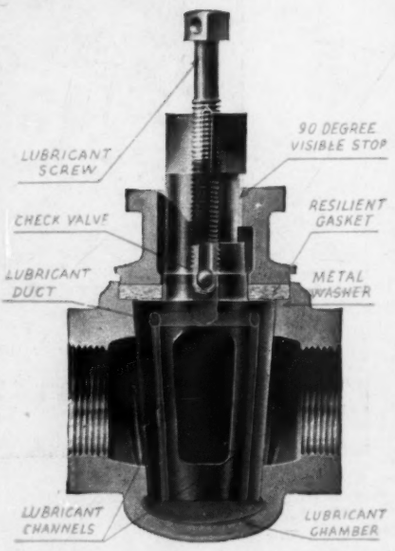
No foreign matter can pass the film of lubricant.

Quarter turn opens or closes valve.

Non-corrosive metallic diaphragm interposed between plug and packing.

Plug held in its seat at all times. Turning of lubricant screw creates hydraulic pressure up to 2,000 lbs. per square inch.

Made in different types of metals to handle every kind of gas, liquid or slime.



Ask for Catalog

MERCO NORDSTROM VALVE CO.

SUBSIDIARY OF THE MERRILL COMPANY

Engineers—

San Francisco, 121 Second St.
Chicago, Peoples Gas Building
Cleveland, Ohio, 325 Engineers Building

Western Factory: Oakland, California

Manufacturers

New York, 11 W. 42nd St.
Houston, 1315 Petroleum Bldg.
New Orleans, 1501 Masonic Temple Bldg.

Eastern Factory: Belleville, New Jersey

AGENCIES IN PRINCIPAL CITIES

To meet various conditions of pressure and temperature and for different services, Merco lubricant is compounded in various consistencies.

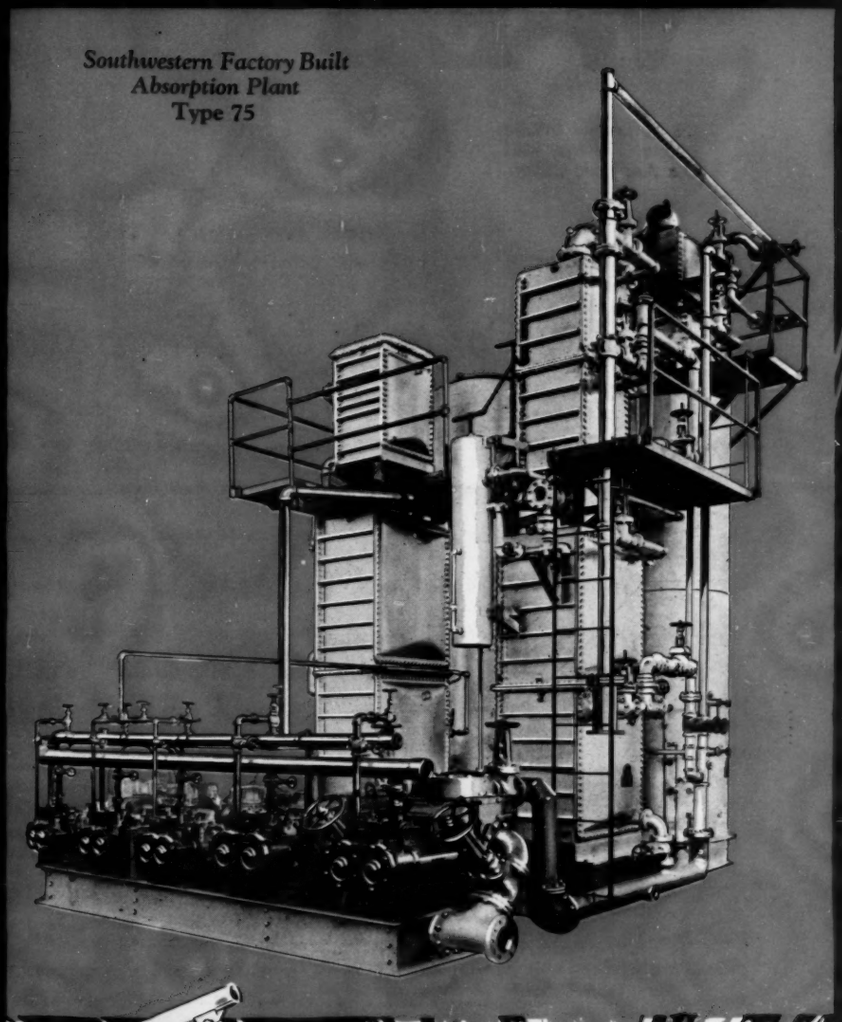
It comes in stick form, for convenient insertion in the Valve.

Two Famous 75's

The SOUTHWESTERN 75 Absorption Plant of 1927

...helped to win the fight for low gasoline manufacturing costs.

Quick installation, high recoveries and low operating costs are Southwestern Absorption Plant features.



Southwestern Factory Built Absorption Plant Type 75

The French 75 of 1914 helped to win the World War.

SOUTHWESTERN ENGINEERING CORP.

HOLLINGSWORTH BLDG.
Los Angeles, Calif.

Branch
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4003

WESTERN GAS

626 S. Spring Street,
Phone TUcker 8982
Los Angeles, Calif.

447 Sutter Street
Phone GArfield 2772
San Francisco, Calif.

Official Publication Of The
Pacific Coast Gas Association

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The design of all BRAUN apparatus has a *background* of exhaustive research—including practical experience, experimentation in design and *careful* tests of materials in the completely equipped BRAUN Research—laboratory · Every factor is considered which may produce greater efficiency, longer life and greater ease of operation

BRAUN

C·F·Braun & Co·Manufacturing Mechanical Engineers

ALHAMBRA CALIFORNIA

TULSA · NEW YORK · DALLAS

BRAUN

Oil *rides on* rubber

And so, too, does gas . . . for rubber, in the form of tires, plays an important part in the conduct of the gas industry.

Public utilities, such as yours, must have unfailing dependability in tire equipment. You watch costs closely . . . you give service and demand service . . . from tires as from everything else.

It is significant that, among the Public Utilities of Los Angeles, Goodyear Tires and Truck Tire Service are becoming more popular than ever because the combination makes for long, trouble-free mileage at low per-mile cost.

"A Tire for Every Need"

Truck Tire Service Co.

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Telephone HO-5574

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220-East Anaheim
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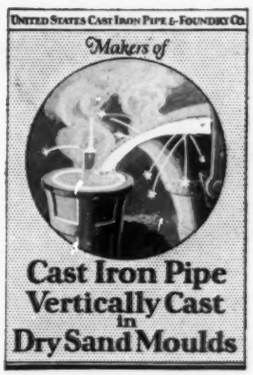
1244 East 8th Street—TRinity 6565
LOS ANGELES CALIFORNIA

"4" deLavaud Line at Loredo, Texas

deLavaud Centrifugal Cast Iron Pipe in large diameters

OVER two and three quarter million lengths of deLavaud centrifugal pipe are now installed, in diameters from 4" to 20".

The many satisfied users find that the ease of handling deLavaud pipe is particularly true in the larger sizes—on account of its self centering bell, and its lighter weight which, of course, is proportionately greater as the size of the diameter increases.



Write for special literature covering the manufacture and use of deLavaud centrifugal pipe.

United States Cast Iron Pipe and Foundry Company

General Offices:
Burlington, New Jersey

SALES OFFICES

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Chicago: 122 So. Michigan Blvd.
Birmingham: 1st Ave. & 20th St.
Buffalo: 957 East Ferry Street
Cleveland: 1150 East 26th Street
New York: 71 Broadway
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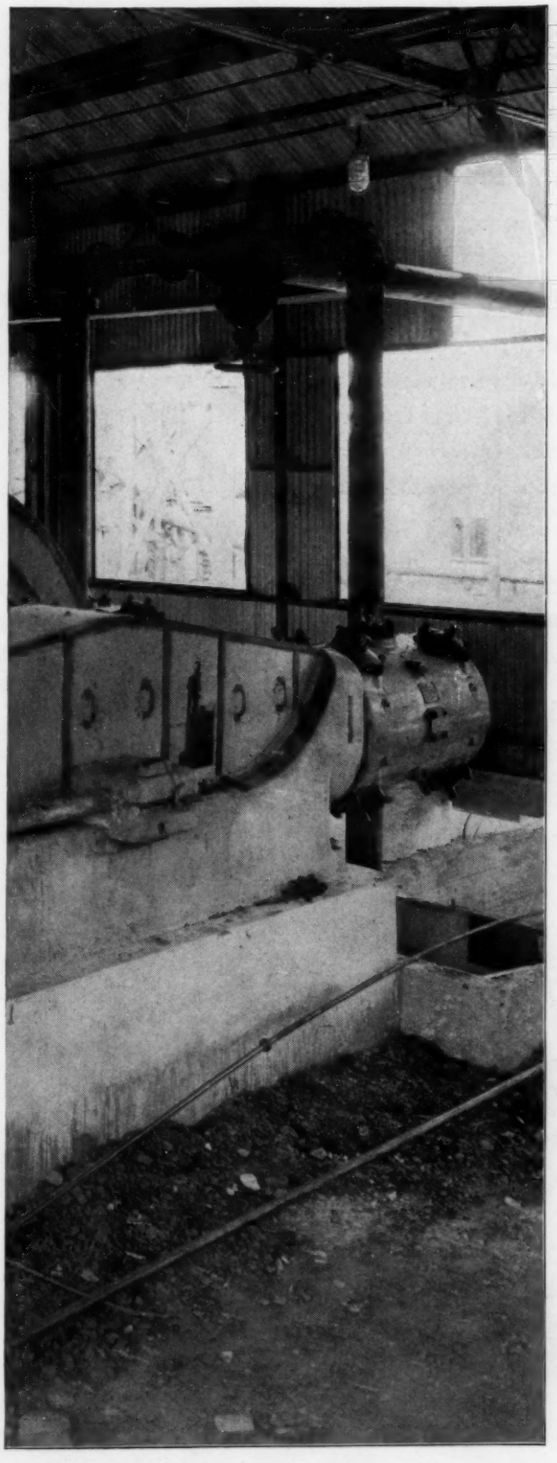
Dallas: Akard & Commerce Sts.
Kansas City: 13th & Locust Sts.
Minneapolis: 6th St. & Hennepin Ave.

THIRTY-TWO

COOPERS IN A ROW



In one of the largest and most modern gasoline plants in the whole country the Sinclair Oil and Gas Company is installing thirty-two Cooper Type-80 twin-engines. The photograph shows the plant under construction.

How unnecessary it is even to mention the many superior features of Cooper engines and compressors, when a company, after having turned to Coopers less than three years ago, chooses them for such an important station.

The C. & G. Cooper Co.

Mount Vernon, Ohio

Dallas, Texas Tulsa, Okla.

Los Angeles, Calif.

Development of the "B" Meter

About 1904 there was a gradually and steadily increasing effort on the part of the Gas Engineers throughout this country to better the efficiency of the gas meter with the result that considerable work was undertaken by different gas associations and their committees.

The Gas Engineers argued that almost all other types of apparatus used by the Gas Companies had shown marked increase in efficiency during the past years and that the gas meter had remained practically without change for the better, overlooking the fact that meter capacities had increased and that several important improvements in the general mechanical construction of meters had been effected during the past decade.

However, the meter manufacturers recognized the equity in some of the many claims and suggestions advanced by the Gas Engineers and were ready to increase the efficiency of their product.

After carefully going over the ground to determine the best policy for the work, definite plans were laid out for remodeling certain sizes of meters under approved scientific methods.

This led to the development of the "B" Meter.

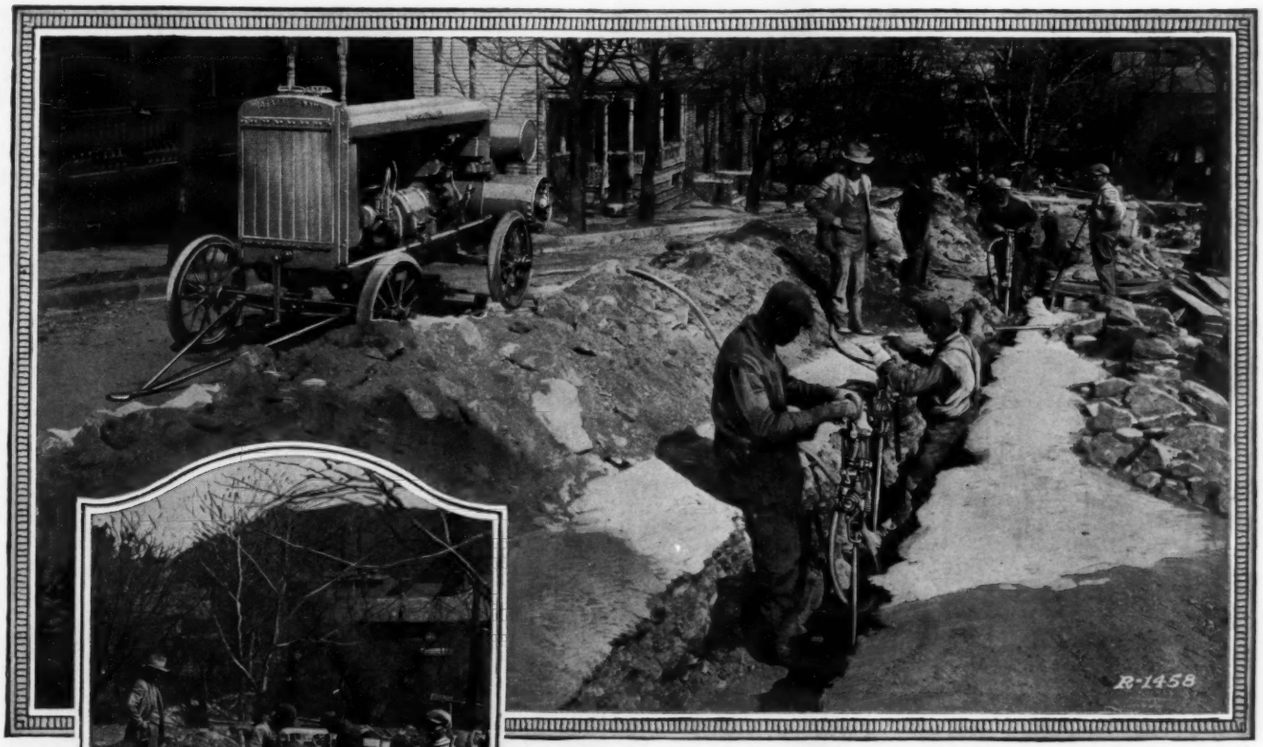
Pacific Meter Works

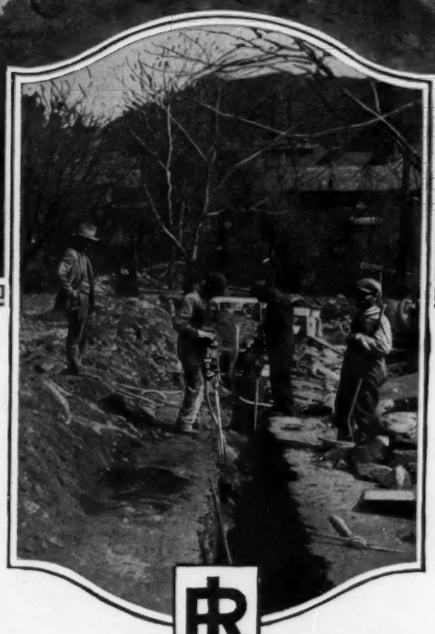
of the
American Meter Company, Inc.
Northwestern Representative

SAN FRANCISCO
495 Eleventh St.

PORTLAND
Northwestern Gas and Electric Equipment Co.

LOS ANGELES
2118 Atlantic St.





I-R "Jackhamer" Drills at work on a trench excavation job. The tool in the background is a CC-35 Paving Breaker. All are operated from the Portable Compressor shown at the left.

Easy to Handle, Easy to Move

In trench work, the excavation of rock is an air drill job, and no other tool will do the work so quickly and easily. In ragged trenches, the easy handling of a "Jackhamer" Drill means everything to the operator, for it can be worked without trouble in the narrowest of quarters.

An I-R Paving Breaker removes the surface concrete faster than twelve men with picks and sledges. Then, when rock is encountered, the "Jackhamer" puts down holes at less than one-quarter the cost of hand methods. Thus the tools not only account for substantial savings in money, but release men for other work.

All the tools pictured above are being operated from one Ingersoll-Rand Portable Compressor. Other sizes and mountings can be obtained to fit the individual job. Each outfit is a complete, self-contained power plant that will move along with the job and go to work under any sort of conditions.

Request a free copy of "100 and 1 Ways to Save Money with Portable Compressors." It is a 140-page book, filled from cover to cover with cost data submitted by contractors, public utilities, and city engineers.

INGERSOLL-RAND COMPANY
11 Broadway New York City

Offices in principal cities the world over.

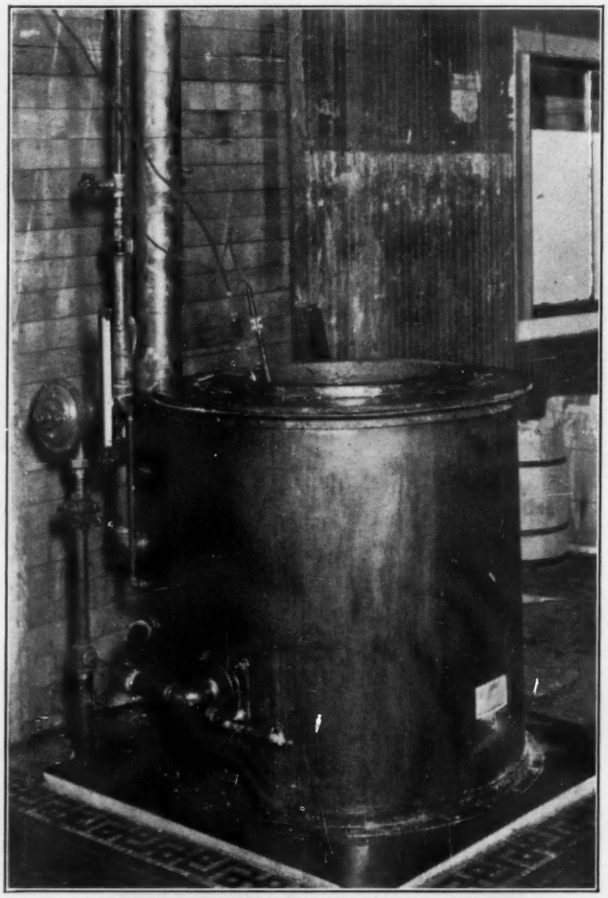
For Canada Refer—Canadian Ingersoll-Rand Co., Limited
10 Phillips Square, Montreal, Quebec

129-PC

Ingersoll-Rand

Aeroplane metal is being tempered in this gas-fired heat-treating bath

THE Thaden Metal Aircraft Corporation, San Francisco, uses a gas-fired salt bath for the duraluminum used in constructing their metal planes. The duraluminum is heat-treated at 940°F. To bring out the fullest strength of the metal this temperature must be maintained accurately during the heat-treating. That is why gas fuel is used. Gas is so easy to control that it is used most often when the finer points of temperature make a big difference.



The gas-fired heat-treating furnace at the Thaden Aircraft Corporation

P. G. & E. Engineers Will Serve You

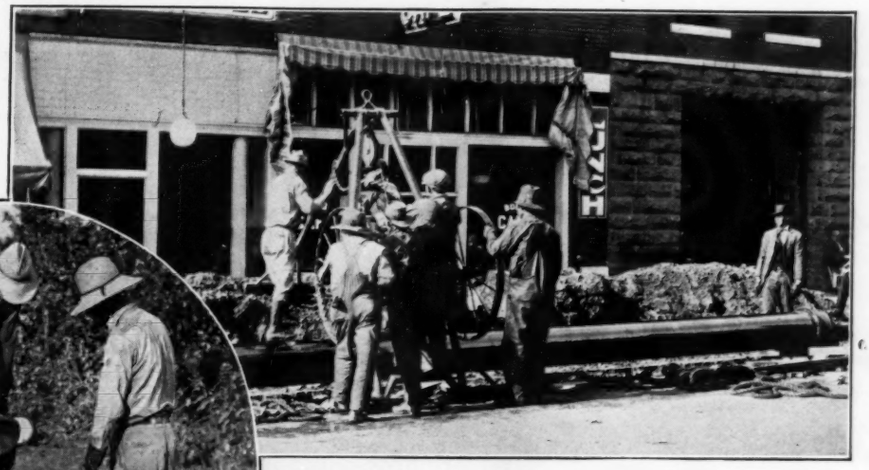
The same engineering service that helps the above corporation is also yours for the asking. Just phone or write to the nearest Pacific Gas and Electric Company office.

Duraluminum in rolls, is put into a molten bath of Sodium and Potassium Nitrate and heat-treated. This metal has the strength of steel but one-third its weight.

PACIFIC GAS AND ELECTRIC COMPANY
P·G·and E·
Owned · Operated · Managed
by Californians

IF IT'S DONE WITH HEAT, YOU CAN DO IT BETTER WITH GAS

Applying Biturine Enamel, Oklahoma Natural Gas Company, 16-inch trunk line.



Installing 16-inch low pressure line, Oklahoma Natural Gas Company, Tulsa, Okla.

EXPERTS CLAIM PIPE LINE CORROSION LOSSES CAN BE LARGELY REDUCED

Proper protective coatings will add years to service

Discussing the oil and gas industries' problem of pipe line maintenance, members of the American Institute of Mining and Metalurgical Engineers declared that the application of proper protective coatings would largely eliminate corrosion losses and add years to pipe line service.

Biturino Enamel Prevents Corrosion Permanently

For more than sixteen years many leading oil and gas industry executives have been successfully solving pipe line corrosion problems with Biturine Enamel—the permanent corrosion preventative. Hundreds of miles of pipe line have been coated with Biturine Enamel and operators have pronounced it entirely successful in giving permanent protection.

Unaffected by Acids, Alkalis or Electrolysis

Biturine Enamel is a heavy, quick-setting bituminous coating, tough but not brittle. It is applied hot and requires no wrapping. Adheres tightly to metal and will not crack. It is absolutely impervious to corrosive elements.

Biturine Enamel is manufactured by Hill, Hubbell & Company as one of a special line of paints for the oil industry.

No skilled labor necessary to apply Biturine Enamel.
Valuable, practical data and specifications furnished on request.

HILL, HUBBELL & COMPANY

Manufacturers of
Highest Grade Oil Industry Paints and Pipe Line Coatings
Factories at SAN FRANCISCO and TULSA

District Offices:

SAN FRANCISCO LOS ANGELES PORTLAND
SEATTLE NEY YORK TULSA BALTIMORE HOUSTON

A Full Line of Street Department Supplies

Pipe Gang Tools

Goodman *Improved* Safety Gas Main Stopper

THE genuine Goodman Stopper is instantly recognized by the name Goodman which appears on the Improved Patented Locking Sleeve. All genuine Goodman Stoppers are now equipped with this sleeve. Efficient as the Goodman Stopper has always been, the new locking sleeve makes the shut-off still more effective and positive. Stopper cannot slip—gas cannot pass.

GOODMAN STOPPER
Reg. U. S. Pat. Office

DEPENDABLE

GAS MAIN BAGS

BUILT IN THREE TYPES

TYPE A—Invisible Seams or Seamless Bag.
TYPE B—Reinforced Seams; heavier and stronger than Type A.
TYPE C—Canvas Covered Bags for use in Mains coated with Tar or Oil. This Bag is different from any other because the lining is loose inside the canvas while the canvas cover itself is fitted snugly to the tube and neck of the bag, allowing the pressure to pass on to the canvas cover, the lining itself being used only as a seal. Rugged, durable and built for wear, the inner bag is partially protected against the effects of tar or gas liquor.

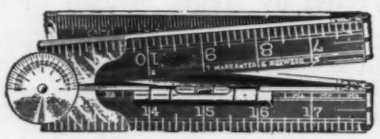
When ordering, specify type desired ***Sent on approval***

Combination Rule, Level and Protractor

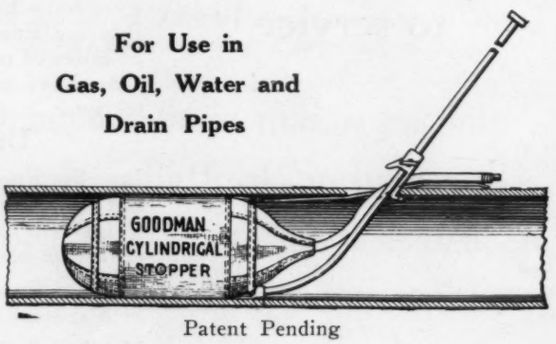
To simplify the work and save valuable time of both foreman and welders when making pipe connections.

No. 86
Drafting Scale and 8ths and 16ths inch.
Price - - - $2.00

No. 87
Outer Edge Brass Bound. Drafting Scale and 8ths and 16ths inch.
Price - - - $2.50



For Use in Gas, Oil, Water and Drain Pipes



Patent Pending

Air Line Mask
With or Without Blower

Safety Gas Main Stopper Co.

523 Atlantic Avenue, Brooklyn, N. Y.

Pacific Coast Representative, C. B. Babcock Co., San Francisco, Calif.

More— PROOF of real Pipe Line Protection—

CERTIFICATE

SMITH-EMERY COMPANY
CHEMISTS - ENGINEERS
245 SOUTH LOS ANGELES STREET
LOS ANGELES

Order No. 87480 *Date* October 24, 1927.

McRae Paint Products Company,
1110 Board of Trade Bldg.,
Los Angeles, California.

****

TESTS OF ELECTROLYSIS RESISTANT PAINT

The samples submitted of "McEverlast Electrolysis Paints" were subjected to the following tests to determine their resistance to electrolysis:

Three specimens of one-half inch pipe, were painted with one coat of "Electrolysis Penetration Coat" and two coats of "Electrolysis Cover Coat". Three days were allowed between coats for drying. These three specimens of painted pipe were used as one electrode and a battery carbon as the other electrode in a 5% salt solution as the electrolyte. Current was furnished by three dry cells connected in series. The painted pipe were immersed 3 1/4" in the salt solution. The carbon (7/8" in diameter) was immersed 3 1/4" in the salt solution. The distance between electrodes was about 1 1/2". The dry cells were of a capacity of 30 amperes and 2 volts, - total potential of 6 volts for the three cells in series.

The test was started September 18th, 1927. On October 24th, thirty-six days after starting the test there had been no passage of current in this time as shown by the discoloration of the solution or the failure of any of the painted test specimens.

Respectfully submitted,

Smith-Emery Co.
CHEMISTS AND ENGINEERS

This test is being continued on "McEverlast" Electrolysis Proof Coatings without changing the electrodes or coating, but in conjunction with the worst alkali soil that it is possible to obtain—truly the "acid test."

We guarantee the quality of our product and give unqualified service. Leading industrial concerns using "McEVERLAST" is additional proof of quality.

EVERLASTING PAINT AND SALES COMPANY

TRinity 3196 1110 Board of Trade Bldg.

"Yes, I read about it"

¶ When there are new methods and new products to be introduced, the trade, class and technical paper serves a great and useful function. Advertising in these journals helps to overcome sales resistance that may be founded on suspicion, doubt, indifference. Dominating campaigns in the trade press broadcast the news quickly and surely to the leaders in the industry and when followed by other sales methods, the hard work of introductory selling has been done. "Yes, I read about it" is the first thing they say. And the salesman can then go ahead with the assurance that he is talking to one who understands.

¶ In the West are specialized journals in almost every field with intensive coverage throughout the empire they serve, essential to every campaign that expects to get maximum results in this rich and growing field.

Send for sample copy, advertising rate card. Survey and other data can be furnished on short notice.

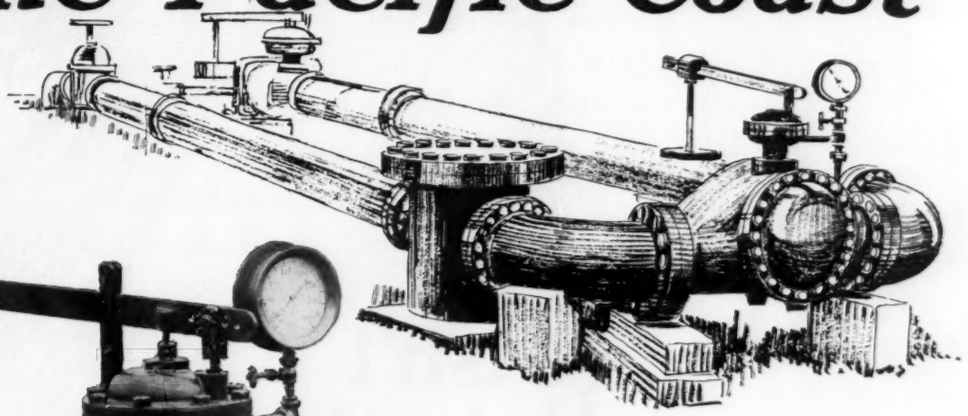
WESTERN GAS is a member of

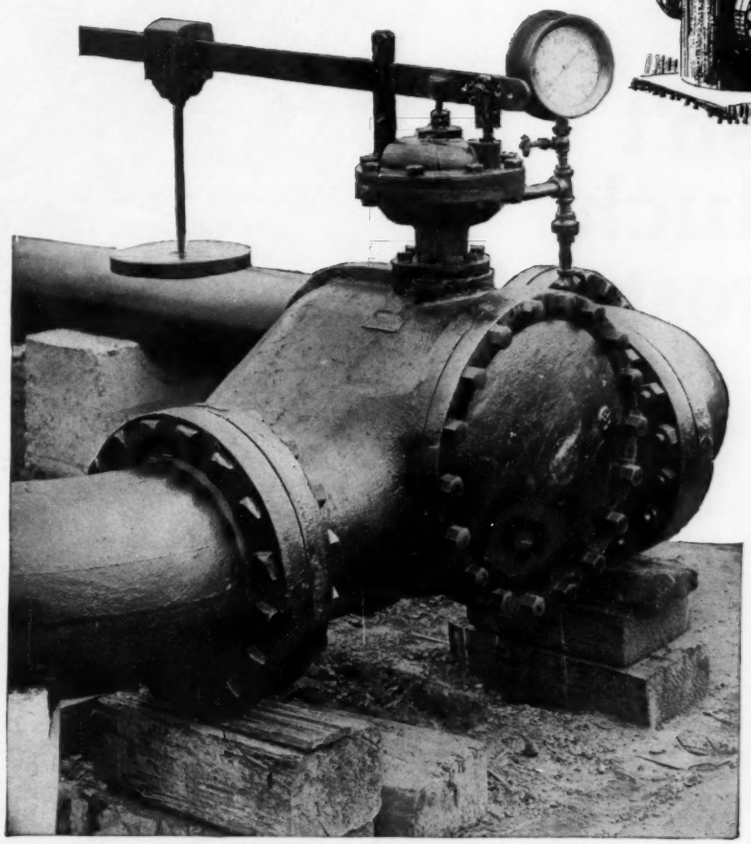
WESTERN BUSINESS PAPERS ASSOCIATION

BUSINESS PUBLICATIONS

Should have an important place in every advertising campaign

EMCO Regulators on the Pacific Coast



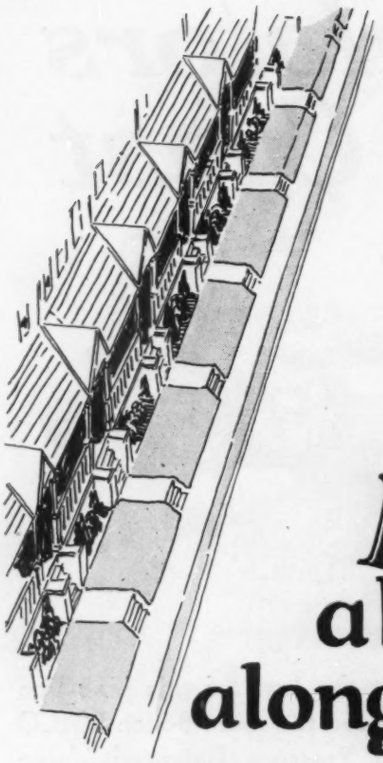


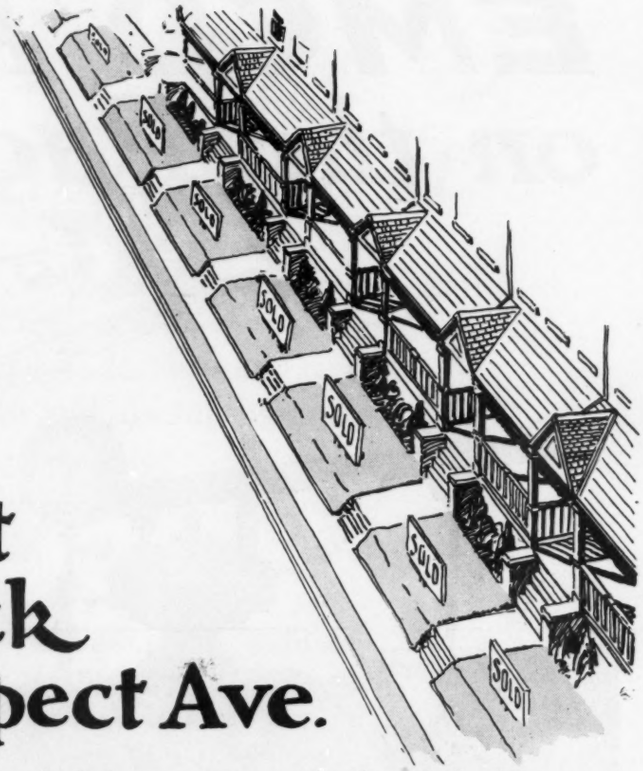
8-inch EMCO High Pressure Balanced Valve Regulator

At the turn of this pipe line is placed the main 8-inch EMCO High Pressure Balanced Valve Regulator, establishing the first gas reduction of approximately 250 pounds main line pressure to a 50 pound outlet pressure. About twenty-five feet beyond is another 8-inch EMCO High Pressure Balanced Valve Regulator, reducing the 50-pound gas to a definite outlet pressure which can be set according to needs at from 10 to 20 pounds.

PITTSBURGH EQUITABLE METER COMPANY
PITTSBURGH, PA.

BRANCH OFFICES
New York, New York.
Chicago, Illinois.
Dallas, Texas.
Los Angeles, Cal.
Tulsa, Oklahoma.
Seattle, Washington.
Columbia, S. Carolina.
Salt Lake City, Utah.
Kansas City, Missouri.





It isn't all luck along Prospect Ave.

When an appliance is brand new and the demand is running ahead of supply, "make" and individual sales points are secondary. There was a time when water heaters were in that golden state.

But those are by-gone days. The public has gotten down to cases. Just a water heater won't do. The product must bear a name that is well-known to consumers. It must operate on the automatic-storage principle. It must be obtainable for a low original cost. And it must give evidence of a low operating cost by its visible simplified construction.

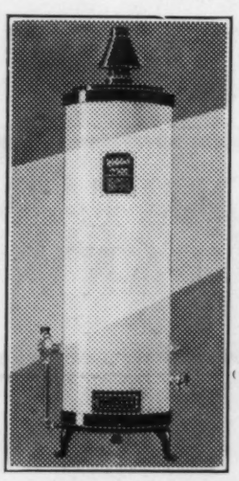
If your water heater sales are not what they should be, investigate. Most likely you will find that the department is still operating on the old order.

* * * * *

To the commercial manager who is conscious of this situation Welsbach offers the practical answer with the Welsbach Hotzone.

And the reason is not hard to find. The Hotzone was born in the plant which developed the gas burner and mantel to its peak of proficiency. That was a good start—exceptional results for not too much money! The Hotzone is a self-action gas water heater. But it isn't complicated in design and thereby hangs the tale of its extremely low original cost and low operating cost. Yet it does every single solitary thing that any automatic water heater will do—except get out of order.

It isn't all luck along Prospect Avenue. And it isn't all luck that Hotzone sales are breaking all water heater records. Send for the full information on this remarkable water heater at the remarkable price. Made in four sizes: Fifteen, Twenty, Thirty and Forty-five gallons. Welsbach Company, Gloucester City, New Jersey. San Francisco office, 863-865 Mission Street.



Welsbach

The name famous for two generations as the leader in gas lighting. Now equally prominent in the fields of gas water heaters, gas room heaters, electric lighting fixtures and electric refrigeration.

HOTZONE

SELF-ACTING GAS WATER HEATER

Welsbach Company,
San Francisco Office,
863-865 Mission Street

Send me your portfolio on Hotzone Seif-Action Gas Water Heaters.

Name.....

Address.....

Signals: 16½-25-31½!

With these three numbers Welsbach carries your Sales quotas right through center for a touchdown . . . Welsbach Radiant Heaters straight-arm sales resistance. The three astounding prices give you a change of pace that baffles would-be tacklers. The famous Welsbach burner, the very heart of the devise, is the greatest heat producer that ever played against Jack Frost.

The "Welsbach" is a gas man's heater. Its efficiency and flexibility assure him of perfect operating results under trying conditions. And here is the rare case where quality, good looks and reasonable price have been adroitly combined. . . . If you've moved your goal posts back this season, you'll need these three products in your line-up to win.

$16.50

Welsbach Radiant Heaters

WELSBACH COMPANY, GLOUCESTER CITY, N. J.

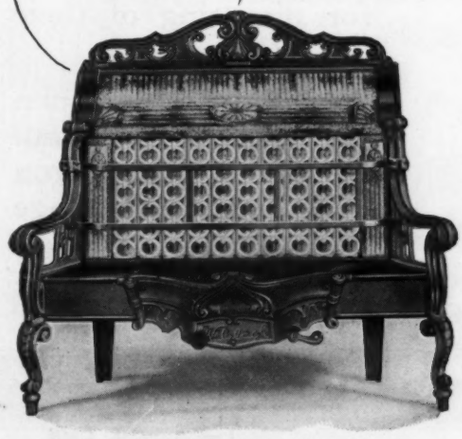
San Francisco Office, 863-865 Mission Street
Member Pacific Coast Gas Association
Member American Gas Association

Approved by the
A. G. A. TESTING LABORATORY

Approved by
GOOD HOUSEKEEPING INSTITUTE

No. 51—Seven glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 20¼ inches wide, 11½ inches deep.

$25



No. 47—Ten glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 24 inches wide, 11½ inches deep.

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No. 49—Twelve glowers. Finish: Silvered Brown. Columns beautifully tinted. Size: 23 inches high, 28 inches wide, 11½ inches deep.

Read— What One Pacific Coast Gas Company Did!

There is one gas company in the West that is looked upon as being about the livest concern in the merchandising field. After years of selling a few of the old line ranges, they took on a well known, closed top range, and their sales doubled. Their success has made it impossible to sell anything but a closed top. They simply found what the housewife wanted, and they hit a new merchandising angle. A good closed top is just as practical as four wheel brakes on an automobile.

"Gas Age Record"

IT WAS SMOOTHTOP that so tremendously stimulated this Pacific Coast gas company's sales. SMOOTHTOP is so different, convenient and obviously efficient that it attracts the attention of women wherever it is shown. It makes women gas range conscious.

Modern women say: "At last here's a range really designed to meet our needs. It makes our old ranges look so out-of-date that we must get a new SMOOTHTOP." This remarkable range gives women a real reason for disposing of their old ones.

Here's a wide open market ready for you. Let us tell you how you can take advantage of it.

Northwest Gas & Electric Equipment Co.

Pacific Coast Distributors,
Standard Gas Equipment Corporation

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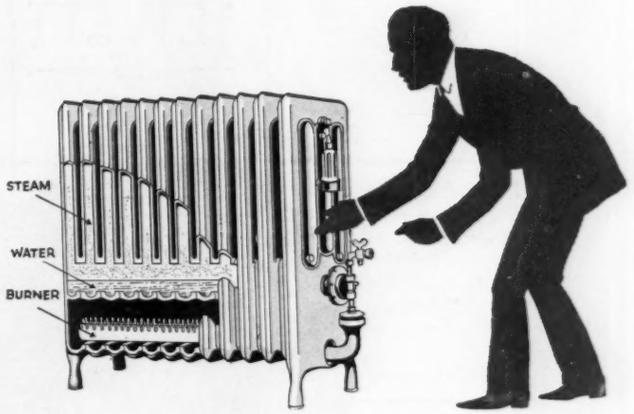
164 So. Central Ave. Los Angeles, Calif.

Safe, Convenient Healthful Heat from the Pacific Gas Steam Radiator



The Pacific gas steam Radiator is a compact, efficient unit that provides healthful steam heat from the gas fuel at low cost. Can be installed anywhere, in new or old buildings. Vents unnecessary. Sturdily constructed. Beautifully finished.

Approved by the Underwriters Laboratories. Installed in thousands of buildings—banks, public buildings, theaters, schools and churches.

An ideal unit for homes and offices, too, because it does not dry out the air and there are no odors. Write for descriptive booklet.

Pacific Gas Radiator Company

Gas Heating Headquarters

Roseberry and Walter Streets, Huntington Park, California

Los Angeles Agency
Pacific Gas Heating Company
1732-40 W. Washington St.
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Gas-Steam Radiators

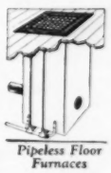
Unit Basement Furnace Systems

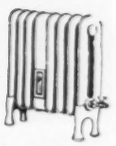
Dual Pipeless Furnaces

Fireplace Radiant Heaters

Recess Radiant Wall Heaters

Automatic Storage Hot Water Heaters


Pipeless Floor Furnaces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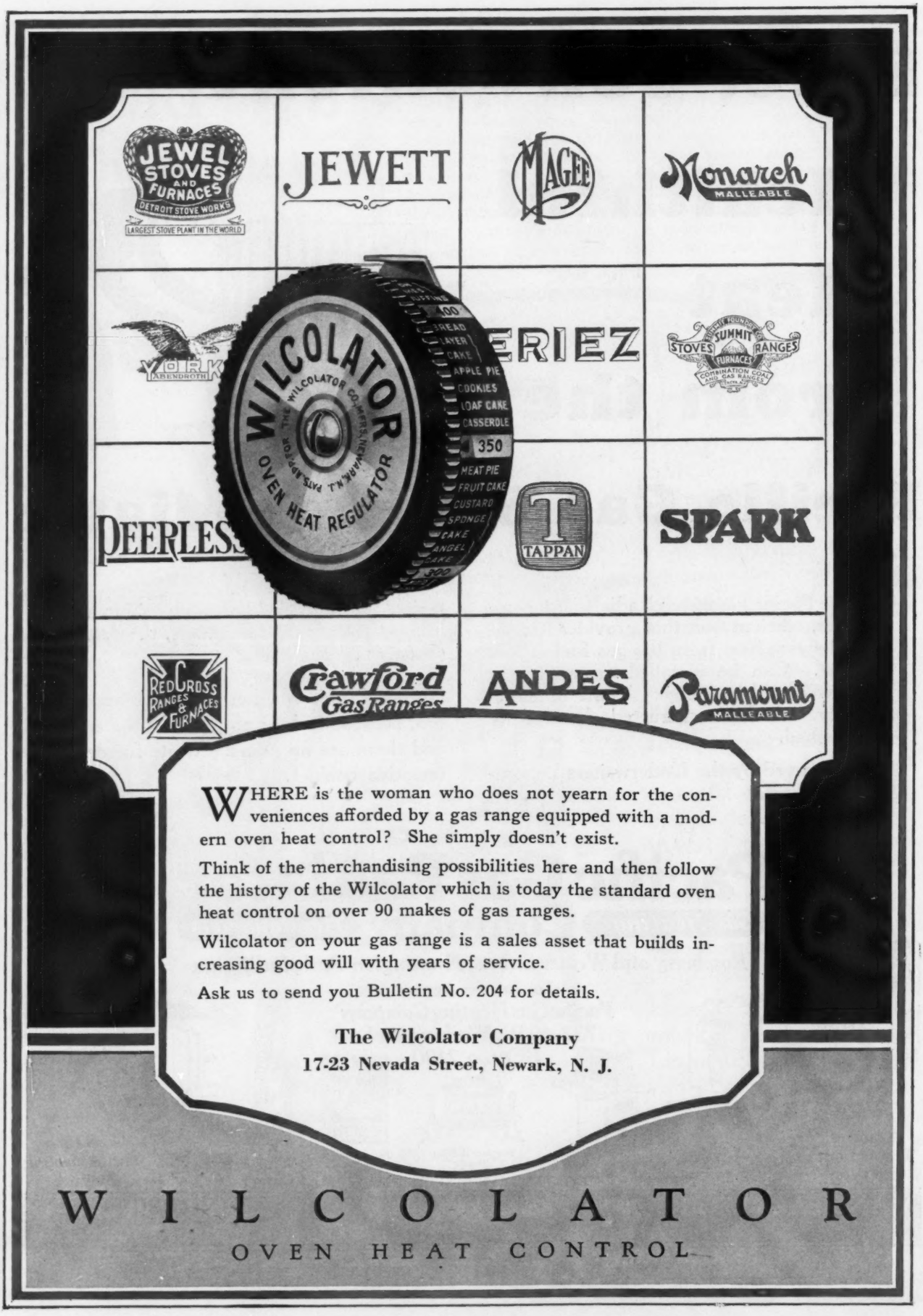
Agencies Throughout the West

Call for a Pacific Heating Engineer

DISPLAY AT METROPOLITAN BUILDING MATERIAL EXHIBIT

MANUFACTURERS of EVERY TYPE of GAS HEATING APPLIANCE
All Vented for Healthful Heat



WHERE is the woman who does not yearn for the conveniences afforded by a gas range equipped with a modern oven heat control? She simply doesn't exist.

Think of the merchandising possibilities here and then follow the history of the Wilcolator which is today the standard oven heat control on over 90 makes of gas ranges.

Wilcolator on your gas range is a sales asset that builds increasing good will with years of service.

Ask us to send you Bulletin No. 204 for details.

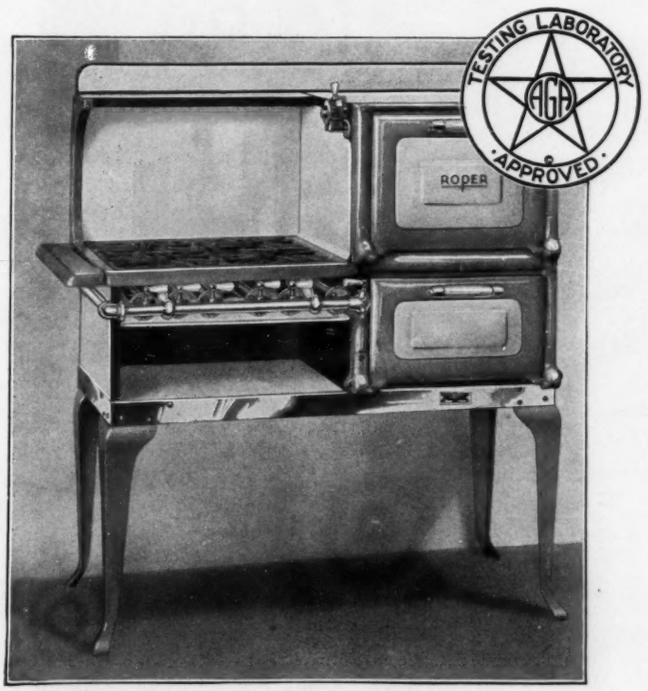
The Wilcolator Company
17-23 Nevada Street, Newark, N. J.

W I L C O L A T O R

OVEN HEAT CONTROL

ROPER VALUES

ARE SETTING THE PACE IN GAS RANGE TURNOVER

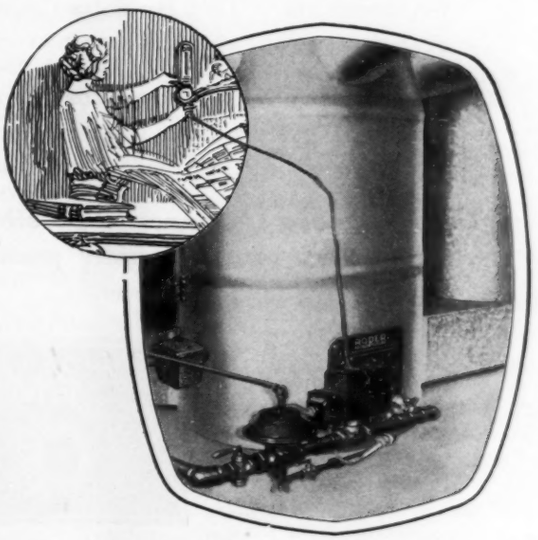


Far in the lead, the NEW ROPER LINE is speeding to sensational new records in retail gas range selling. It was inevitable! Striking beauty appeal—quality in every inch of every range—convenience features that magnetize women's desire—value never before approached—these are the factors that have given Roper merchants this clear and outstanding advantage over competition.

Get the Roper catalogue and investigate the turn-over and profit opportunities this greater Roper line has to offer. Write us.

—and ROPER GAS FURNACES are Putting New Speed Into Home Heating Sales

Now's the time to go after the home heating business with full force. The Roper Gas Fired, Warm Air Furnace will help you do it. It will bring home to the public more strongly than ever the fact that they **can** do it better with Gas. Write for the Roper Furnace catalogue and data book now.



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You Have a Benzol Market

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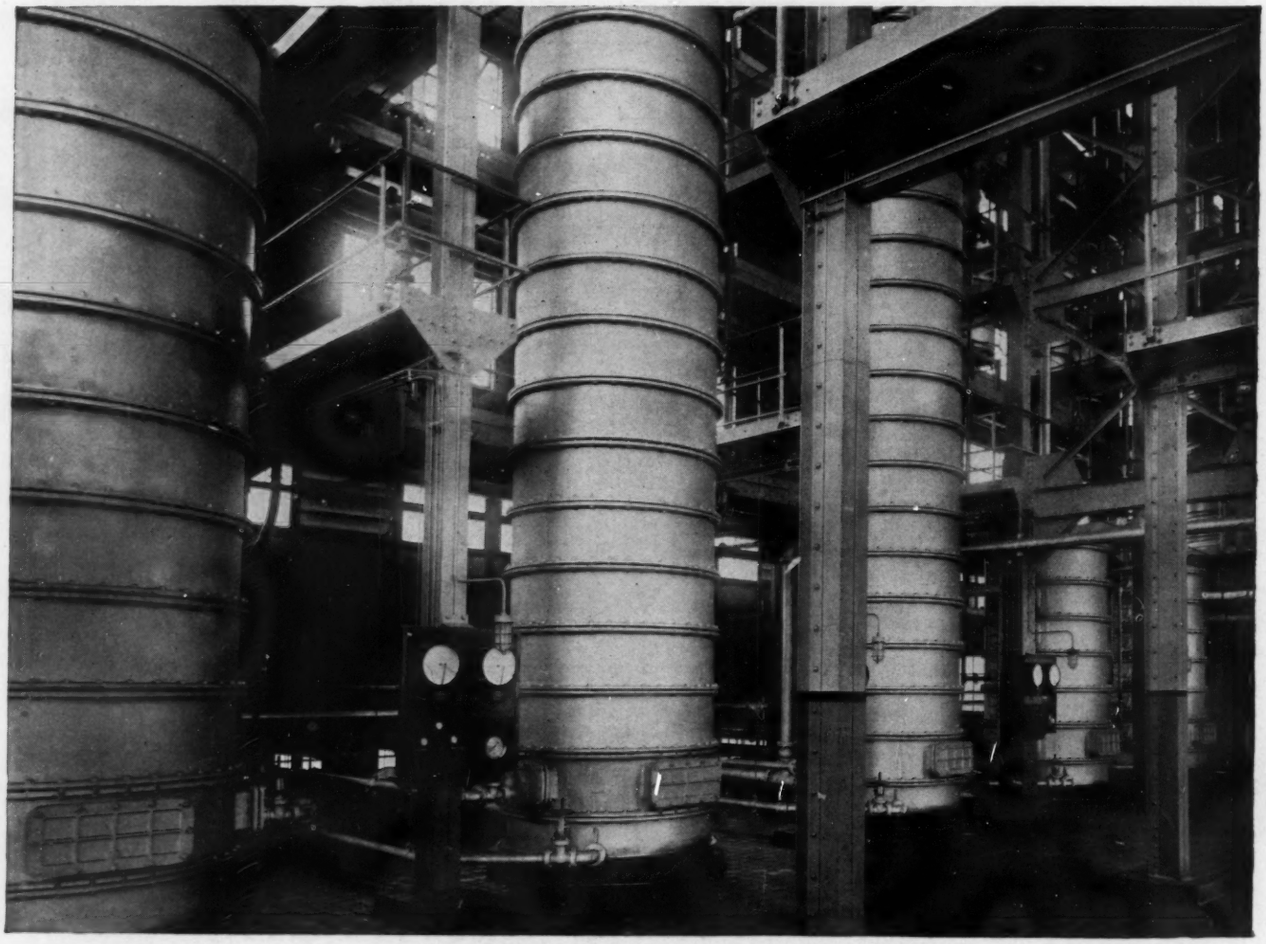

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Do not ignore the income possibilities of your benzol market. Our engineers will survey plant and sales possibilities without obligating you.

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WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in *Western America*

The Passing *of* Public Ownership

By GEO. L. HOXIE

¶ Public ownership, or, more fittingly, "political-ownership," is described by the author as "passing" in the sense that it is completing one phase of a continuous cycle—for traces of political ownership are to be seen on every page of ecorded history. In our own day, says Mr. Hoxie, 99 per cent of the world's important undertakings are monuments to individualism—the extreme antithesis to political ownership. Mr. Hoxie, who is research engineer for the Southern California Edison Company, delivered his paper at the September 13th general session of the Pacific Coast Gas Association convention at Santa Cruz, Cal.

THE subject assigned to me is "The Passing of Public Ownership." Two things require definition—What do we mean by "passing," and what do we mean by "public-ownership?" Taking the latter first, one meaning of public-ownership is the kind of ownership usually called customer-ownership. This amounts to *real* public *ownership*. However, to most people, "public-ownership" means what is better defined as "political-ownership," and that, I take it, is what you wish me to discuss.

"Public-Ownership" has an alluring sound but does not mean what the words imply. When one says that he "owns" a property he does not mean merely that he paid for it, but rather that he has some control over it. When we say that an enterprise is politically owned we clearly mean, what is the obvious fact, that politicians have control over it. The taxpayers indeed pay the bills but the politicians are the real owners, who handle the properties as they will, sometimes in defiance of the expressed will of the voters. Indeed the usual scheme does not permit voters to express themselves. A mayor, or some other official is elected after a campaign over police, or vice or farm relief, or tariff or something else. This elected official then, as a mere incident among his duties, selects politicians to compose some public utility board; this board itself frequently acts as a mere rubber stamp for some political staff executive who has previously built a political machine out of the payrolls the taxpayers provided. If the opposing candidate for the elective office had been chosen by the voters, the same political boss would nevertheless have been found in the same place—managing the utility as if it were his private property. "Political-Ownership" says what it means. The words describe the thing that is at issue. Isn't it worth while for all of us to break ourselves of the habit of saying public ownership when the thing that we mean is political ownership?

The second thing that requires definition is, what do we mean by "passing?" That again is one of those obvious things that nevertheless require analysis. When we say a parade has passed, we visualize something that is over. When we say that an automobile on a race track has passed, we know that barring accidents we shall see it pass again and again.

Now, public-ownership, or political ownership, seems to be passing. The question is, is its passing one phase of a cycle and will it return or will it presently be gone for good? In my opinion the passing that we now seem to be observing is merely one phase of a cycle. The heresy itself is as old as history. The delusion probably will return again and again to plague succeeding generations, since it is a curious thing that with all our intelligence we do not as a race seem to be able to read the lessons of history with profit. It seems unfortunately to be true that each generation must usually learn through its own experience, although in the case of such experiences as the world war, so appalling that the tale of them is repeated from father to son without altogether losing force in the telling, the lesson may possibly last for two generations, or perhaps longer in countries that move more slowly. It is said that China, more than a thousand years ago, went through a Bolshevist experience much like Russia's. Some intelligent Chinese claim the memory of China's former terrible experience is so rooted in the national subconsciousness as to make it impossible for Bolshevism to take root again in China for at least another thousand years.

I HAVE said that political-ownership is old. It is in fact as old as recorded history. The pyramids of Egypt were built under political ownership. Under the old absolutism all property was, theoretically at least, owned by the head of the state. What caused the change from political-ownership to private ownership—for there has been a real change? Once all important undertakings were undertakings of the gov-

ernment, the initiative of all but the ruling class was repressed, as must always be the case under political-ownership, and not much material progress was made until the liberation of the individual had begun. Secretary Hoover seemed to have this old stifling of the individual in mind when he said:

"We have seen nothing in our history to warrant us in the risk of stopping all progress by the deadening hand of the govern-

IN our day we find only a small fraction of really important undertakings are handled by political-ownership, except perhaps in Russia. Elsewhere throughout the world the genius of the individual, as fast as released from what Secretary Hoover called "the deadening hand of the government," produced outbursts of material progress only to be likened to the outburst of growth that each spring succeeds the passage of winter. Instead of the few, small and insignificant enterprises, all government-owned, that were known in the old days of absolutism, we have today a multitude of important undertakings, great and small, with surely more than 99 per cent of them monuments to individualism. Without this individualism indeed, the present world population could not be supported. Officialism alone could never provide daily bread for our present numbers. Nowhere else in the world was the individual so completely set free as in the United States during its first hundred years and nowhere else was progress so rapid. The tremendous change from political-ownership to private ownership in the world's affairs has gone along simultaneously with the building up of the world's wealth, with the life of the ordinary citizen changed from a squalor that we can hardly even imagine, to a prosperity that permits even the poorest of us to enjoy some privileges that kings could not have enjoyed in the days of the Pharaohs. Are we to conclude then, that this change in methods of conducting business was the cause of increased well-being, or can it be that our increased well-being, and the substitution of individual initiative for the old political ownership, came about independently and are unrelated?

I think any fair minded reasoner would conclude, from theoretical considerations alone, *first,* that no people can prosper greatly under an arbitrary despotic government where the despot or the government owns everything of major importance; *second,* that if any government takes over larger and larger business affairs, until finally the government is running pretty nearly everything of importance, it necessarily follows that that government, even though it might have started as a democracy, must in the end become as despotic as any government that we read of in ancient history. However, I prefer not to deal in theory, but to use facts instead.

The fact to which I have just called attention—the necessary change from democracy to autocracy that inevitably accompanies the entrance of democracy into large scale business enterprise—is well illustrated by the late Professor James Mavor in his book "Niagara in Politics." This book tells about the politics of the hydro-electric enterprise of the Province of Ontario in Canada. The reaction of the business upon the government and the control of the government by the politically-owned business, is clearly described by Professor Mavor. I cannot resist two quotations:

"All of the Governments, often greatly against their will, have been obliged to find the enormous sums of money demanded by the Commission for the carrying out of its projects. All of the Governments have repeatedly been called upon to legalize by ex post facto legislation, acts done by the Hydro Commission in flagrant violation of Statute Law and even of the Acts passed in behalf of the Hydro itself."

"The Ontario Hydro-Electric system is customarily erroneously represented as an experiment in 'public ownership.' It is really an attempt on the part of a small number of politicians to establish an industrial monopoly and to manage this monopoly in such a way as to keep themselves in power. In order to effect this object they have violated constitutional law and practice; they have assumed absolute authority; they have closed the courts of justice against proceedings adverse to themselves, and they have encroached upon the liberties of the people."

ONTARIO'S government evidently needs to travel the same road but a little farther to become as powerful, as autocratic, and as little regardful of human rights, as the government of any czar or kaiser. Such modern examples remind us that while it appears that political-ownership is an old and generally discarded theory, the change from substantially all government ownership to 99 per cent or more private ownership, has not been a steady progress. The government-in-business theory flames up every now and then, subsides, flares up again a little less violently, and so on. The phenomenon may be compared to the cycles of one of those comets which, very brilliant when first recorded, is less brilliant on its next passage and so on until it finally becomes discernable only through a telescope. I shall mention only a few illustrative instances of these flare-ups of political-ownership.

Germany: We find that Germany owned railroads before the war and, under autocracy, managed them fairly well. When the German Republic was set up, Germany proved no exception to the rule that democracies cannot handle business. Employees were multiplied, their duties lessened, expenses increased, and consequent losses were thrown back on the nation. When under the Dawes' Plan, it became necessary to make these railroads contribute to reparation instead of to deficits, a corporation, The German Railways Company, was forced to take over the operation of these roads. Almost the first act of the corporation was to reduce the expense for salaries and wages by about 750,000,000 marks annually by dispensing with superfluous employees, etc. Shortly afterward there were substantial increases in wages for the remaining employees, together with reductions in freight rates. Deficits have ceased and full contributions to reparations are being made. The latest available report of the Agent General for Reparation Payments, Mr. S. Parker Gilbert, says:

"With regard to reparation payments, the Commissioner notes the fact that the Company effected punctually the payment of 595 million gold marks representing interest on the railway (reparation) bonds for the second annuity year, and that it also collected and paid, in behalf of the Reich, the full 250 million gold marks due in respect of the second Annuity year out of the yield of the Transport Tax."

Belgium and France: Belgium and France, although relatively well managed countries, have been carrying so heavy a load in government railways that their post-war recoveries have been greatly hampered. The following quotation from Mr. Geo. E. Roberts, one of the foremost economists of America, said:

"The question of the ownership of the railways which proved to be the stumbling block in the way of Belgian stabilization plans, is a particularly important one in those countries of Europe which are experiencing budget difficulties. Everywhere in Europe ownership of the railways is burdensome to the governments because they must run at a loss in order to satisfy the public . .

". . . The French railroads, dominated by government control, are a continual burden to the public treasury . . . the report of the demands of foreign banks upon the Belgian government for the 'industrialization' of the Belgian railways is received with concern and pronounced disapproval in France . . . Public consent never can be obtained, it is said . . . . . The same element in the parliamentary body which refuses to levy the taxes necessary to create a balanced budget wants more state monopolies, to be run on terms pleasing to the public rather than upon business principles."

ITALY: In Italy, not only government railroads, but telegraphs, telephones and many other forms of government enterprise cursed that country before Mussolini. Such a strangle-hold had been secured on the government that it was hopeless to try to effect a cure by purely legal means. The disease could only have been handled at that stage by the means that Mussolini used;

(*Continued on Page 57*)

Oscar H. Fogg
President

B. J. Mullaney
Vice-President

Clifford E. Paige
Treasurer

Alexander Forward
Managing Director

A. G. A. Organizes *at* Chicago Sessions *for* Another Year *of* Progress

By GEORGE H. FINLEY
Managing Editor, WESTERN GAS

NO one who had the good fortune to sit in on the deliberations of the American Gas Association at Chicago could have failed to come away with a profound impression that the gas industry is "thinking right" on its important problems, and that it is organized to meet its bright future with assurance.

It is hardly an exaggeration to estimate that nearly five thousand gas men were in A. G. A. sessions at the Hotel Stevens during Convention Week, October 10th to 14th inclusive. They came from all parts of the country, with a goodly showing of natural gas representatives, newly become members of the A. G. A. through the merger with the Natural Gas Association of America, among them. Central location of the meetings brought out a larger representation of West Coast and Middle West delegates than usual.

The President's address, by A. B. Macbeth, and Managing Director Forward's report, both submitted at the general session, Tuesday, October 11, left no doubt that the American Gas Association program is on a firmer footing than at any time in the past. With the addition of 79 natural gas companies not previously in the A. G. A., as well as 1,102 individual members taken in through the Natural Gas Association merger, the A. G. A. membership record now stands as follows:

Holding Companies	26
Gas Companies	624
Foreign Companies	4
Associate Companies	21
Manufacturer Companies	448
Individuals	4839

Convention business went forward with its usual smoothness, the election of 1927-28 officers following the report of the nominating committee at the first general session. Retiring president A. B. Macbeth of the Southern California and Midway Gas Companies, has turned over his gavel to Oscar H. Fogg of the Consolidated Gas Company of New York who heads the American Gas Association for the ensuing year. New officers and section chairmen, as determined by the Chicago elections, are as listed below:

OFFICERS

President — Oscar H. Fogg, Consolidated Gas Co. of New York, N. Y.

Vice-President—B. J. Mullaney, The Peoples Gas Light & Coke Co., Chicago, Ill.

Treasurer—Clifford E. Paige, Brooklyn Union Gas Co., Brooklyn, N. Y.

SECTION OFFICERS

Accounting Section: Chairman—Edward Porter, The United Gas Improvement Co., Philadelphia, Pa.; Vice-Chairman — F. H. Patterson, Rochester Gas & Electric Corp., Rochester, N. Y.

Commercial Section: Chairman—J. J. Burns, Laclede Gas Light Co., St. Louis, Mo.; Vice-Chairman—G. M. Karshner, Consolidated Gas Co. of New York, New York, N. Y.

Industrial Gas Section: Chairman—F. C. Mackey, Public Service Co. of Northern Illinois, Chicago, Ill.; Vice-Chairman—J. P. Leinroth, Public Service Electric & Gas Co., Newark, N. J.

Publicity and Advertising Section: Chairman—E. Frank Gardiner, Midland Utilities Co., Chicago, Ill.; Vice-Chairman—James M. Bennett, The United Gas Improvement Co., Philadelphia, Pa.

Manufacturers Section: Chairman—H. Leigh Whitelaw, American Gas Products Corp., New York, N. Y.; Vice-Chairman—John A. Fry, Detroit-Michigan Stove Co., Detroit, Mich.

Technical Section: Chairman—Walter C. Beckjord, American Light & Traction Co., New York, N. Y.; Vice-Chairman—H. E. Bates, The Peoples Gas Light & Coke Co., Chicago, Ill.

To complete the A. G. A. official line up, the Natural Gas Department, formerly the Natural Gas Association of America, retains the officers elected to head the former association with N. C. McGowen of Shreveport, La., as Chairman, and S. W. Meals of Pittsburgh, Pa., as Vice-Chairman.

Atlantic City was named as convention city for 1928, and A. G. A. men will gather at the popular site of many former meetings some time early in October of next year.

Officers and employees of the Peoples

(*Continued on Page 71*)

How Can *the* Gas Industry Attain Its Potential Market?

Some Comments on the Gas Industry

By SAMUEL INSULL
President, The Peoples Gas Light and Coke Company

OF the many features which went to make up the American Gas Association's excellent program at Chicago, one of the most inspirational was the address which is published on this page. It gains significance in the fact that the name of Samuel Insull is as well known in the electrical field as in that of gas. He sees a future for our industry which in comparison will make the present seem only a beginning—"provided we have the right mental attitude toward the potential market and towards ways and means of capturing it."

Mr. Insull gave his address on October 12, at the Wednesday morning general session, under the title: "Some Comments on the Gas Industry."

IN the six years since I last had the pleasure of addressing an annual convention of the American Gas Association, the gas industry has made decided progress. My purpose this morning is to point out, as I see them, some ways and means of assuring further progress.

In my last appearance here much was said about better engineering, about scrapping old ideas and methods as well as antiquated equipment, and about modernizing rate making and sales promotion. Some of the audience at that time thought my suggestions were unduly drastic. Programs of your subsequent conventions have indicated a large measure of attention to those very problems.

This has been one of the most encouraging signs of the times in the gas industry. It is especially encouraging when viewed in conjunction with the vast potential market for our product. It is encouraging, that is, *provided* we have the right mental attitude toward the potential market and toward ways and means of capturing it.

The statistics of the industry nationally are on the whole gratifying. The total output of manufactured gas now approaches five hundred billion cubic feet per year. Gross sales have increased 352 per cent in 25 years while the population of the country has been increasing only 50 per cent. We have in the aggregate eleven million customers—an impressive total when we remember that there is no rural gas service and not much in communities of less than 5000 population. Total sales per capita have increased more than 70 per cent in ten years—a figure all the more gratifying because it reflects increased sales per customer as well as an increased number of customers.

But, encouraging as such figures are, they become a positive handicap if we take them only as an excuse for swelling our chests and our heads and telling the world how well the gas industry is getting along. Dwelling upon them is useful only as it serves to sharpen our conceptions of opportunities still undeveloped. When so much ground can be gained in the face of adverse circumstances, represented by loss of the lighting load, mounting oil prices, and all the consequences of the World War, we should be stimulated to seek larger opportunities.

Years ago I used to bore some of my confreres in the electrical industry by preaching on every possible occasion that it was the job of the electric company to supply the energy for every purpose in its community to which electricity could be applied. Those electricity supply companies which have taken that as their job have been the leaders in their industry and have contributed most to speeding up its development.

I can offer the gas industry no better generalized advice than a paraphrase of that same urging. It is the job of every gas company, large or small to supply its product for every heating purpose in its community—every last one—to which gas can be reasonably applied. When we have that conception of the gas company's job and when we analyze what the doing of it means, we see that the progress represented by the growth and gains to which I have referred represents only the merest scratching of the surface.

Circumstances of the time and trends of public thought invite us into larger fields. There is increasing public appreciation of industrial economics. Conservation of natural resources receives increasingly respectful attention. We have a standing invitation to help eliminate the damage and waste inflicted upon most American cities by the smoke nuisance.

It is easy to talk big about what we are doing and can do, but not so easy to square performance with it. In our trade literature, there is much about gas as the "ultimate fuel" and the "universal fuel," much about the economic sin of burning coal in a raw state, and so on. But when we tackle the job of correcting this economic sin and making gas the universal fuel, we are apt to work in terms of the kitchen stove and the family water heater.

Do not misunderstand me as minimizing the importance of the domestic load. It will continue to be the important part of our total load for longer than you or I can estimate and it will call for corresponding attention continuously. But we must look beyond the domestic load if we would take even a few faltering steps toward making gas the universal fuel.

OUR POTENTIAL MARKET

Our statistical department has made up for me estimates on the total heat requirements of the country and the fuels by which the requirements are supplied, and it has translated them into their equivalents in manufactured gas. These figures, representing the theoretical potential market for gas, are so large as to be meaningless. It should be sufficient to say that manufactured gas is supplying only about two per cent of the total heat requirements of the country. That is a long way from making gas the universal fuel. But the distance is not necessarily discouraging when we examine the potential market on a more practical basis.

It is estimated that 20 per cent of the bituminous coal now used could be replaced by manufactured gas. The chief items in this 20 per cent of present bituminous consumption would be as follows: one half of the bituminous now used for domestic purposes; one half of that used for industrial purposes, exclud-

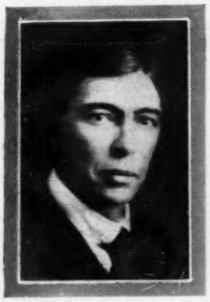
(*Continued on Page 66*)

Electric Drive *vs.* Steam Drive *in a* Large Oil Gas Plant

By E. L. HALL
General Superintendent
*Portland Gas and Coke Company**

A LARGE percentage of gas works apparatus consists of a multiplicity of small units, most of which by reason of their size preclude the use of steam equipment of high efficiency.

Such steam will usually be supplied non-condensing on account of the size of equipment and because of the scattered location of such equipment with reference to any condensing system that might be installed. The layout of most gas plants is also such that drive units are quite a distance away necessitating expensive steam lines with the resultant high investment and high heat losses. Electric drive on the other hand is generally free of these disadvantages but is ordinarily supposed to be somewhat less reliable. However fourteen years of operation in the plant of the Portland Gas & Coke Company, Portland, Oregon, have shown almost no interruptions for this character of drive. Furthermore in a good many localities and especially with combination companies cheap power at reasonable rates is available.



E. L. Hall

A factor in the situation is the possibility of some steam from waste heat boilers in all methods of gas manufacture; to the extent that in a properly designed plant very little fuel should be required for steam raising.

In a short report of this kind the many factors in and combinations of steam or electric power units cannot be given. Possibly by an illustration of the two extremes i.e., modern electric drive and *usual* steam drive the respective advantages may be sufficiently stressed. Of course some of the steam-driven units may be large enough to operate condensing; in this case a great deal of additional investment for condensing apparatus etc. would be required; possibly at not a very large saving over non-condensing units. To simplify matters a comparison has been made up for the Portland Gas & Coke Company's 30,000 M daily capacity oil gas plant. Steam and power required are similar to water gas, as steam is used in the oil gas generators amounting to 30 to 40 lbs. per M. cubic feet. Blowers are used for the heating-up period which is a very similar requirement to blasting a water gas set.

The plant is equipped with motors as follows:

GAS PLANT	Number of Units	Total H.P.
Blowers	5	580
Exhausters	5	470
Water Pumps	4	500
Oil Pumps	4	80
Air Compressors	3	155
Oxide Mixer and Conveyors	4	57
Purifier Blowers	3	35
Washer Cooler and Air Pumps	4	180
Drip and Sump Pumps	8	16
Msl. Exciter Brick Hoists etc.	13	95
	52	2168

CARBON WATER FILTER PLANT	Number of Units	Total H.P.
Air Compressors	2	85
Wet Vacuum Pumps	3	80
Dry Vacuum Pumps	3	275
Filter Wheels	4	20
	12	460

CARBON BRIQUETTING PLANT	Number of Units	Total H.P.
Dryer Fans	4	140
Presses	2	40
Screens	3	5
Bucket Elevators	4	8
Portable Conveyors	11	28½
Stationary Conveyors	8	34
Dryers	4	80
Miscellaneous	3	50
	39	385½

LIGHT OIL RECOVERY PLANT	Number of Units	Total H.P.
L. O. Pump	1	5
Water Pumps	2	100
W. O. Pumps	4	85
Tower Scrubber Pumps	4	80
Tar Pumps	2	10
Miscellaneous	1	3
	14	283

LIGHT OIL REFINING PLANT	Number of Units	Total H.P.
Benzol Pumps	5	43
Soda Pumps	2	4½
Wash Oil Pumps	1	5
Wash Oil Scrubbers	2	23
Agitator	1	7½
	11	83

TOTALS	Number of Units	Total H.P.
Gas Plant	52	2168
Filter Plant	12	460
Briquet Plant	39	385½
Wash Oil Plant	14	283
Light Oil Purification Plant	11	83
	128	3379½

This shows a resultant full load demand of 2520 kw. The actual power usage per annum is 9,500,000 kw.hr. or an average of 1080 kw. The yearly load factor is therefore 43 per cent which corresponds very closely to that of gas generation.

The plant is equipped with two 500 kw. 400 v. 3-phase steam turbine-driven electric generators and is also supplied with current from an associated company through a total transformer capacity of 3375 kv.a. To be a self-contained plant an additional 1000 kw. turbo generator would be required, and will be added in making computation of cost for investment.

For steam generation the plant is equipped with three 600 h.p. water tube waste heat boilers and four 300 h.p. water tube oil-fired boilers. To be a self-contained plant about 750 h.p. additional capacity should be added in oil-fired boilers. Steam is normally generated at 175 lbs. pressure and 100° F. superheat.

The boilers have shown an average efficiency of 75%. Steam for generating electric current amounts to 19 lbs. per kw.hr.

The total investment for waste heat boilers, oil-fired boilers, steam turbines and all electric motors including sufficient capacity to make a self-contained plant will be $675,000 which at 14 per cent investment and depreciation charges will amount to $94,500 per annum.

The steam for power amounted to 28 lbs. per M cu.ft. of gas. for process to 53 lbs. per M cu.ft. of gas and the kilowatt hour consumption at 2.25 per 1000 cu.ft. of gas an equivalent steam consumption of 43 lbs. per M cu.ft. of

(Continued on Page 64)

*Prepared as a part of the American Gas Association Water Gas Committee's report, for the 1927 convention held at Chicago in October.

Southwest Men Meet *in* Houston, Tex.

The Place of Natural Gas in the A. G. A.

By ALEXANDER FORWARD

Managing Director, American Gas Association

I BRING you first the greetings of Colonel Oscar H. Fogg, President of the American Gas Association and his regret that he cannot meet with the Southwestern Division of our Natural Gas Department at this time. He expects, however, to attend the Annual Convention of the Natural Gas Department in Dallas next May. Those of you who attended the recent Convention in Chicago will remember how he and the other veterans of the manufactured gas industry extended the warmest welcome to our new natural gas members.

My subject, "The Place of Natural Gas in the American Gas Association," is like discussing the place of one of the twine spires of a church. Natural gas has the position identical with that of manufactured gas. In our committees for the new Association year there is full natural gas representation from all parts of the field; there is no activity of the Association in which our natural gas members do not play as prominent and influential a part as our manufactured gas members. There is perfect equality of opportunity, of standing and of purpose. There is no information obtainable for the use and advantage of the members of the Association that is not immediately made as completely available to any one group of our members as to the other groups. Our mailing lists at headquarters are joined together into one. Our records are interspersed with manufactured gas, natural gas and manufacturer company members. The gas industry of America is united in fact as well as in name.

It is not to be expected that newly allied machinery will operate with the utmost smoothness and the most efficient correlation from the beginning. There are new acquaintances to be made by each side; there are problems that are new to one or the other and there are lines of endeavor that must be learned. I venture to say that before th next Annual Convention of the American Gas Association every particle of the organization will be working in harmony with all other parts and that it will be impossible, so far (*Continued on page 66*)

NATURAL GAS men of the Southwest gathered in Houston, Texas, for a three-day program of meetings and entertainment held from October 31 to November 2, under the auspices of the Southwest Division, Natural Gas Department of the American Gas Association. There were 273 registered at the meeting.

As indicated by the program printed below, the features of the sessions were all closely related to the Southwest industry. Several of the papers delivered appear elsewhere in this issue, and the message brought to the convention by Major Alexander Forward from A. G. A. Headquarters is reproduced above.

The committee on arrangements for the Houston meetings was headed by C. B. McKinney of the Houston Pipeine Company, and included W. A. Raymond, J. F. Cushing, C. Lee Wood, H. E. Danner, A. E. McKiearnan, M. A. Hardie, C. V. Allen, Harvey S. Smith, Charlie Kirk, Halsey Tucker and J. A. Dormant.

H. C. Morris of the Dallas Gas Company, Frank Chase of the Lone Star Gas Company, and E. H. Kifer of the San Antonio Public Service Company made up the committee on papers for the sessions.

In the absence of N. C. McGowen, chairman of the Natural Gas Department of the American Gas Association, H. C. Morris of the Dallas Gas Company called the first session of Monday, October 31, to order, and read a letter from Mr. McGowen expressing his regret at being compelled to be absent. Mr. Morris presided throughout most of the sessions, and E. A. Clark of the Oklahoma Natural Gas Corporation conducted question discussions which made up part of the program.

There were a number of special features balanced the excellent business program of the meetings, a smoker being staged for the men on the evening of October 31, and a committee of Houston women having the entertainment of visiting ladies in hand. The Houston Pipe Line Company was also scheduled to show a motion picture film on Tuesday evening, describing pictorially the industrial development of the territory contiguous to Houston and the Gulf Coast region. Dancing was to follow the motion picture.

Time and place for the next meeting of the Southwest Division will be determined at the general meeting of the Natural Gas Department in Dallas, May, 1928.

While a more complete report of the Houston proceedings will be offered in *Western Gas* for December, the advance program of the sessions, with such last minute corrections as it was possible to include at the time of going to press, is given below:

First Day: October 31, 1927
9:30 A. M.

Presiding—H. C. Morris, Dallas Gas Company (in the absence of N. C. McGowen, Chairman Natural Gas Department American Gas Association.

Invocation—Rt. Rev. C. S. Quin, Bishop of Houston.

Introduction of Mayor of Houston—Capt. E. H. Buckner, President Houston Pipe Line Company.

Address of Welcome—Hon. Oscar Holcomb, Mayor of Houston.

Response—H. S. Smith, Dixie Pipe Line Company.

Paper—"Standardizing the Open Flow from Natural Gas Wells"—T. W. Johnson, R. R. Brandenthaler, and E. L. Rawlins, U. S. Bureau of Mines, Bartlesville, Okla.

Discussion—

Paper—"The Value of Property Appearance and Maintenance"—R. J. Daugherty, The Empire Companies, Bartlesville, Okla.

Discussion—

ADJOURNMENT UNTIL *2* P. M.

Afternoon Session, October 31, 2 P. M.

Paper—"Natural Gas Problems of the Southwest"—Frank Kirk, Houston Pipe Line Company.

Discussion—

Paper—"Development of Conservation of Natural Gas"—William F. Chisholm, Director of Minerals Division, Louisiana Conservation Commission.

Discussion—

Paper—"Institutional Advertising"—Keith Clevenger, The Empire Companies, Bartlesville, Okla.

Discussion—

Second Day: November 1, 1927
9:30 A. M.

Address—"Place of NaNtural Gas in American Gas Association"—Major Alexander Forward, Managing Director American Gas Association.

Paper—"House Heating With Gas"—J. W. Duvall, Oklahoma Gas and Electric Company, Oklahoma City, Okla.

Discussion—

Paper—"Fundamentals in Arriving at Gas Reserve in Southwest Territory"—J. S. Ivy, The Palmer Corporation, Shreveport, La.

Discussion—

ADJOURNMENT UNTIL *2* P. M.

Afternoon Session, November 1, 2 P. M.

Question Discussion—
What are the Advantages and Disadvantages of Curb Box Meters?

(*Continued on Page 65*)

Natural Gas Problems of South Texas

By FRANK KIRK

Houston Pipe Line Company
Houston, Texas

IN bringing before this body the natural gas problems of South Texas, I am taking it that the territory referred to as South Texas is that portion of the state adjacent to the Gulf of Mexico starting at the Louisiana line and extending to the Mexican boundary, and in a general way following the curvature of the gulf and extending approximately one hundred and twenty-five miles into the interior of the state.

FOUR GROUPS OF PROBLEMS

In this territory the gas problems are in general the same ones confronting the industry as a whole over the entire country with the addition of a few problems caused by local and territorial conditions. These problems may be divided into four general groups, each blending with and into the others and the solution of each predicated upon the successful solution of each of the others.

First is the financial problem. I am not going to discuss it as I do not know "what it is all about."

Second, locating and securing an ample supply of gas.

Third, transportation at a reasonable cost to market.

Fourth, securing a definite and balanced market.

Back to the second problem: In connection with the supply of gas, the South Texas natural gas industry faces its most serious problem, that of more conservative drilling together with a careful studied completion of the wells. This is necessitated by the general geologic formation in which the greatest volume of gas produced in this territory is encountered.

As a general rule the gas in this area is found in a very fine sand and is in many instances from beds of volcanic ash and sandy shales. These sandy shales drill very similar to shale, and often times are passed through by drillers inexperienced in this area and logged as shale or shale and boulders. Little or no gas show is visible on the settling ditch or in the pit. A common occurrence as a result of this is a wild well blowing in from an unknown sand on account of letting the mud get thin.

For safety a well should have plenty of surface casing set and thoroughly cemented. A drilling gate and blowout preventer with one of the small ports connected up so mud can be pumped or run into the well as the drill stem is removed, is also standard use among experienced operators. A large reserve pit and a supply of oxide or barite for increasing the specific gravity of the mud staked near the rig tends to eliminate or at least greatly reduce the danger of uncontrolled gas wells which in the coastal sediments rapidly crater and cause irreparable damage.

Perhaps the two greatest problems from a production standpoint which the gas producer must work out as rapidly as possible are: First, the amount of gas to be taken from each well daily.

Second, the lifting of the salt water from the producing sands—thus keeping the gas dry and the well pressure up to the true sand pressure of the field.

¶ On these pages appear several of the papers read at the October 31-November 1 meetings at Houston, Texas. The paper on this page is an interesting account of the production, transportation and marketing obstacles which must be surmounted to bring natural gas to the growing centers of South Texas. Mr. Kirk tells too of phenomenal commercial and industrial growth being registered in this section.

¶ Keith Clevenger, of the Empire Companies, Bartlesville, Okla., in his paper on "Institutional Advertising" (reproduced on the reverse side of this page) makes a clear analysis of public relations problems as they affect the natural gas operator, and then goes on to define the human appeal which advertising must make if it is to accomplish its mission in the minds of the public.

REGULATIONS OF DOUBTFUL VALUE

The Railroad Commission allows 50 per cent volume withdrawal based on the open flow test. This is practically the same as no rule at all. In the first place it is inadvisable to make open flow tests of the wells. The fine sand which comes through the smallest screen rapidly cuts out the screen and the gate valves on the Christmas Tree endangering the well and the field as a whole. In the second place, I know of no gas well in this area which will put anything like fifty per cent of its open flow volume into a pipe line without cutting the screen out and sanding up or immediately bringing in water. To prevent this requires the individual study of each well. The drop in pressure of each well must be watched carefully and its withdrawal regulated.

Recently the Houston Oil Company of Texas has been running 2-inch tubing in the wells as soon as the liner is set. This tubing leaves the well through a control head and the well is allowed to clean itself through this tubing which is chocked down by a bean. This is really the same as bailing a well from the bottom up as it lifts the heavy mud from the liner by a strong suction action created at the base of the tubing or gas lift. The well having been cleaned thoroughly is then tied onto the pipe line from the casing port of the control head. A bean here regulates the amount of gas flowing into the lines.

The size of choke and therefore the amount of gas to be taken from the well is arrived at by experiment. A two pen recording gauge mounted on each well with one pen arm recording the pressure on the tubing and the other the back pressure on the casing head gives a graphic chart of the capacity of the sand. As long as the pressure on the tubing is constant and shows no surging the well is operating efficiently. As soon as this arm gets erratic and leaves a wavy chart line the well is being pulled too rapidly and the sand is heading, therefore causing heaving, water troubles, etc. In most instances the gauges will operate steady and the well will put out its maximum on a ratio of 1 to 2.

In various of the South Texas fields some of the largest wells, that is some of the wells producing the greatest amount of gas, have been completely lost together with the equipment over the wells by improper, careless and hurry-up drilling methods. Great craters have been formed around the well, depleting

(*Continued on Page 62*)

Institutional Advertising

By KEITH CLEVENGER
The Empire Companies
Bartlesville, Oklahoma

INSTITUTIONAL advertising is an old theme, but it has by no means been worn threadbare, as demonstrated in this paper read before the Houston meeting of the Southwest Division, Natural Gas Department of the A. G. A.

Although the gas industry's awakening sales sense calls for more and better advertising to sell our product, and appliances in which to burn it, we cannot dispense with informative and educational copy.

Mr. Clevenger tells why the natural gas industry is particularly in need of this type of advertising, and draws the lesson that the most effective institutional advertising is written from the angle of the man who is expected to read it.

I WANT to preface the few remarks I have to make today, on the subject of Institutional Advertising, with the statement that advertising is not a salesman, advertising is not a surgeon, advertising is not a magic genii. Advertising will not sell your business to the public. Neither will it eradicate any fundamental or organic ills within the business. Nor will it transform a business in ill-repute into one of good repute. All that advertising can do is to help accomplish these things. The selling of the business, its service and its products, the curing of any ills from within the business, any transformations that are to be made in policy must have their inception in the executive offices of the organization and be followed down through the operating personnel to the very last one who in anyway has a contact direct or indirect, with the customers served or the public. Advertising is merely the herald—the paid herald—that announces to and holds before the public the product or service for sale, the policy changes, etc., and to a very great extent creates desire for the product or service, and respect for and appreciation of the policies of the organization.

There are three primary objectives of utility advertising:

1. Increased load sales
2. Increased appliance sales
3. Increased public confidence and good will.

The gas company's services affect intimately and are of interest to:

1. Its patrons
2. Its stockholders
3. The general community.

It will be noted that while the principal objectives to be sought are conditions, the associations by and through which these improved conditions are to be obtained are with people.

The maintenance of revenues that assure good service to patrons, as well as an attractive investment for stockholders, requires that sales be made at rates that will permit of a reasonable earning on the fair value of the property used and useful in the business. To provide this revenue, promotion of new and more extensive uses of natural gas, both for domestic and industrial purposes, must go on continually—as well as the intensive selling of gas-using appliances, contemplated to encourage a greater, and, at the same time, a more economic use.

All of these processes depend upon and require the thorough understanding of, and good will for, the utility, the vital human service it renders and its methods and its policies.

This is more especially true in regard to the natural gas utility, for the reason that the very nature of our business requires that by far the greater portion of our processes of service, our gathering lines, our main transportation lines and our city mains be hidden underground and our wells and compressor stations be located in places seldom seen by our patrons and the general public. Our thousands of employees battling the elements, laboring against inconceivable odds to keep up a constant service, the millions upon millions of dollars invested in buried lines or in little-seen plants seldom come to the attention of our patrons. About the only evidence of our service that they are conscious of is the clicking of the meter, or the arrival of the monthly bill.

In addition to the hidden nature of our business there are a number of other conditions affecting our business at this time which it is most vital that we consider.

First the natural gas business has had a most rapid growth in the past ten years. Once a rather inconsequential factor in the public utility field it has risen to the third place from a standpoint of financial investment and patrons served. From a business which a few years ago was of a local nature in each of the communities served, great systems have grown up and many communities are now served by the same organization. The engineering and financial problems incident to such a development have absorbed for the most part the attention of those engaged in their growth and development. This has had the effect of creating a most efficient mechanical organization. However, few people, not intimately associated with this development are capable of, or have any appreciation of machinery. Most certainly nobody aside from the operator has any particular sentiment about a machine.

Then again, the tendency prevalent in the general public utility field toward mergers and combinations, avowedly for more efficient operation and greater facilities of service, is being "viewed with alarm" in many quarters. The combination of great sums of money invested in the business through the holding company is causing some of this apprehension, but even more alarming than this feature is the feeling that this is bringing about a condition of absentee management and operation detrimental to the best interests of the patrons and the communities served.

MUST LOCALIZE OPERATIONS

These two conditions just mentioned necessitate I believe, that we give a great deal of thought and attention to the humanizing of our business—the establishment, if you please, of a personality, an individuality for it, in every community in which we operate, the localizing of operating and managing authority as much as possible. The very mechanical efficiency, the value of more economic operation and finance, all contemplated for the improvement of patrons' service and best public interest are over-shadowed by the bigness of our operations, unless we can bring these values down to the patron and the public through the close contact and hence the confidence and good will created by the feeling that the local company has the power and the authority to handle its local situation, insofar as local operating policies and participation in community progress are concerned.

If we can accomplish this localizing of company operations as we should, then we will be in a better position to offset the effects of the third condition now affecting our business, namely, the competitive situation which has sprung

(Continued on Page 60)

Figure 1

Figure 2

Gas Proves Logical Fuel *in* Denver Potato Flake Business

By ROBERT H. TAYLOR
and
WILLIAM M. GAYLORD

THIS is the second of a series of articles *Western Gas* is publishing on the industrial uses of gas in Denver, Colorado, where manufactured gas is served to a varied range of users. Mr. Taylor, who collaborates with Mr. Gaylord in the present installment, wrote an exceedingly interesting account of the use of gas in can manufacturing for the September, 1927, issue of *Western Gas*. He is engineer of gas utilization for the Public Service Company of Colorado, and Mr. Gaylord is assistant engineer of gas utilization for the same utility.

TO a stranger strolling through Denver's largest Public Market Building, the crowd around one of the booths near the Fourteenth Street entrance might mean a fire, a fight, or a foot race. But to one familiar with the market, it would indicate that the potato flake machine was doing business, as usual. While probably the smallest gas-fired installation in the Denver potato flake industry, this machine is of particular interest because the flakes are sliced, cooked and drained in plain view of the public. Many a housewife who successfully resists the lure of other articles finds herself on the way home with a box of these flakes under her arm, when her shopping list called only for spinach.

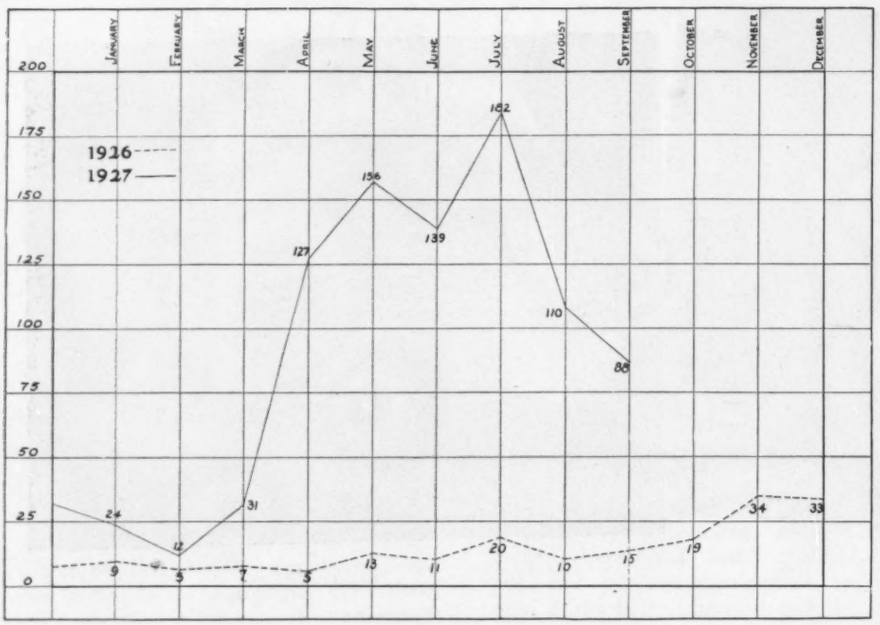
OPERATION OF COOKER

Figure 1 is a photograph of this potato flake cooker, taken from the burner end, showing clearly the construction of the machine. At the right rear corner is the slicer, being loaded by the operator. A disc carrying a knife of involute shape forms one side of the slicer bin. As the disc revolves the potatoes are flaked, the flakes dropping through the disc into the hot oil below. In the center at the far end of the machine can be seen the paddle wheel which circulates the oil through the four-pass channel. The speed of the wheel is such that it requires about three minutes for the flakes to reach the chain belt conveyor at the left end. This conveyor, driven by a quarter horsepower motor operated from the light circuit which also operates the slicer disc and the paddle wheel, extends slightly below the level of the oil in the channel. As the flakes float up to this conveyor belt, they are picked up and carried over the edge of the machine to a chute and slide into a pan from which they are taken by hand and packed. The speed of the chain belt conveyor is slow enough to allow the flakes to drain thoroughly before leaving the machine.

The cooker is about four feet wide and six feet long with a height to the top of the oil channel of three feet. The channels are ten inches wide and six inches deep and under normal operation the depth of the oil is two inches. White enamel finish and nickeled trimmings make an attractive display.

To keep the oil at the proper temperature, three atmospheric burners are used, as can be seen in the photograph, extending the full length of the machine and located directly under the partitions between adjacent passes of the oil channel. The burners themselves are made of 1¼-inch wrought iron pipe, drilled with two rows of ports, the rows being 90° apart and the ports spaced ½-inch. No pilot lights are used because in starting all burners are turned full on, then cut down to about one-half capacity for normal operation. A temperature of 300° is maintained, which has proved to be more satisfactory than the higher temperature employed in usual methods of quantity production. This is explained by the fact that the potatoes are not soaked after the peeling and slicing operation, as is usual practice, and do not absorb any water, so will cook as quickly at a lower temperature. It is claimed that this method of dry handling leaves a greater percentage of starch in the flakes and a crisper and more edible flake is produced.

(Continued on Page 52)



LEFT: Charting the course of Southern Counties Gas Company's recent campaign, which is described in the present article. The solid line tells the story of the campaign, which began the second week in April. The broken line records water heater sales for 1926.

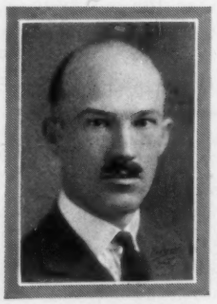
Winning *the* Water Heater Load *by* Campaigning

By CLYDE H. POTTER
General Commercial Agent, Southern Counties Gas Company

IT is a generally conceded fact that for a number of years the gas utilities, particularly throughout southern California, have been called upon to devote their major efforts to the development of their transmission and distribution systems, to the erection of large holders and to other technical and engineering problems, in order that they might keep abreast of the phenomenal growth in this part of the West. During this period, elaborate gas distribution systems have been installed with the result that the industry has ably met the extraordinary "peaks" brought about by a constantly increasing population.

To meet the above conditions, the best brains of the industry were needed and in the rush to have each sub-division piped for gas ere the consumer asked for "Service," little, and in some instances, no effort was made to develop the load upon the existing lines. The pioneering period of the business here quite overshadowed any thought of building up the load on Mrs. Average Consumer's service. She was forgotten and permitted to struggle along with any type of gas appliance which she thought she required.

What happened? After graduating from the coal or wood class, she purchased an "expensive (?)" $39.00 black gas stove. Then came the World War followed by a tremendous improvement in living conditions. Salaries increased, Mrs. Average Consumer moved into a better home, but she retained her old gas range, now 20 or 30 years of age, an antique in the new order of things.



Clyde H. Potter

Following the war savings campaigns, came the monthly payment purchase plan and automobiles, victrolas, radios, and a hundred luxuries over night became necessities. Did the gas industry cash in comparably in this new age of better living conditions? Not very well. Although the oven control, whole enamel features, automatic lighters, and other desirable labor-saving devices, appeared in the gas man's picture, Mrs. Average Consumer still protested the price of a gas range if it exceeded the $50.00 mark. We did not educate her to demand better appliances as did other merchandisers of less important household utilities.

What is true in the gas range, is equally true with the room and space heater as well as the all-important gas water heater. A systematic survey of the 117,000 consumers on the lines of the Southern Counties Gas Company has revealed the fact that but a small percentage of our consumers have any knowledge of the comforts, convenience and contentment that comes with a modern automatic storage gas water heater.

With these undisputed facts before us, we set out to provide Mrs. Average Consumer with economic hot water service; in a word, to win the gas man's "will-o'-the-wisp," the water heater load.

SETTING THE QUOTA

Our sales record indicated that our complete water heater sales for 1926 were 181, a pitifully insufficient number. Early this year the merchandising department was set a quota of 1,000 automatic storage gas water heaters to be sold and installed on our lines during 1927. Although the figures somewhat startled us when we looked at the sales of the previous year, we remembered our recent radiant heater campaign, took heart and laid plans for the 1,000 water heater goal.

In the February 1927 issue of *Western Gas,* we said that there was no royal road to merchandising. In part, we quote from that article:

"The solution of successful merchandising lies in this very simple formula:

"A definite policy of selling appliances."

"A stock of approved and recognized appliances."

"Advertising support, both direct mail and newspaper display."

"A well organized sales force, and

"A coordinated effort from GHQ down to the last outpost, where a girl in a distant office may be your only sales representative."

APPLYING THE FORMULA

The above formula proved highly effective for 1926 range and space heater campaigns and doubly effective during this year when, to October 15th, we have placed on our lines (and they are all operating) 911 approved, automatic

storage gas water heaters. Furthermore, our sales force is not going to stop at 1,000 but intends to go beyond the 1100 mark.

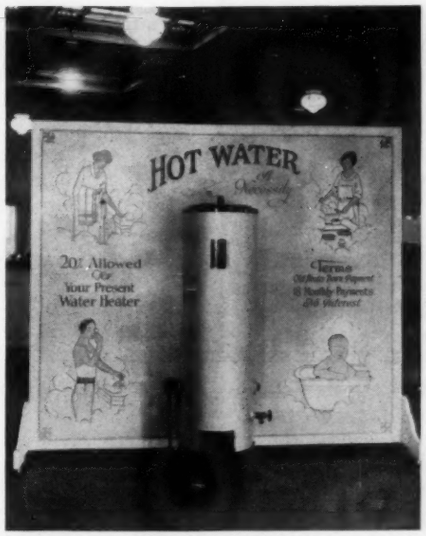
As to policy of selling appliances, we have one. It is very definite in that the company advertises, displays, sells and merchandises 100 per cent. Sixteen years of experience have taught us to believe in and support such a policy.

As to an approved and recognized water heater, we are merchandising one. Our product is nationally advertised and recognized. We have it in 15, 20, 30 and 45 gallon sizes, one for every requirement. It was chosen after careful testing and study and is giving 911 Southern Counties Gas Company consumers better hot water service than was deemed possible. The 20-gallon model already has passed through the A.G.A. testing laboratory, while the three other sizes will be tested just as quickly as the laboratory experts can do so. All four models bear the seal of approval of Good Housekeeping Institute.

As to direct mail and display advertising, we prepared our own copy and used it liberally. There were no eastern references to coal or snow—it referred specifically to southern California conditions.

In the matter of a well organized sales force, let the results of the campaign speak for the sixteen men who wrote water heater history into our records.

Regarding the last part of the formula, the coordinated efforts, it may be said that from each of our eight district managers to the service men and meter readers, selling water heaters was the order of the day, as well as night, because not a few of our sales were closed in the evening when the salesman told his story to the man of the house who could not call at the gas office during business hours.



A water heater floor display used at Santa Monica district office during the Southern Counties Campaign

The campaign proper did not start until the second week in April. Prior to that time, plans for the campaign were being formulated, advertising copy written, stocks ordered and distributed and displays made in 28 offices on our system throughout southern California. Most important of all, however, was the matter of preparing the organization of employees for the campaign.

LIBERAL TRADE-IN ALLOWED

An introductory trade-in allowance for the old water heater was authorized, making it possible for the consumer to realize something for an appliance which she believed had some value. This was one of the pivotal points of the entire sale and it is felt that not too much emphasis can be placed upon this idea. A casual glance over the popular selling necessities and luxuries of the day, automobiles, radios, gas ranges, and furnishings, is convincing evidence of the importance of allowing something for the old water heater.

Liberal term payments were offered, making it easy for the consumer in most modest circumstances to obtain an approved water heater which she otherwise could not afford to purchase.

The "appeal to action" part of our advertising copy carried this sale-closing line, "Your old heater is the down payment." Another clincher was, "No interest charges."

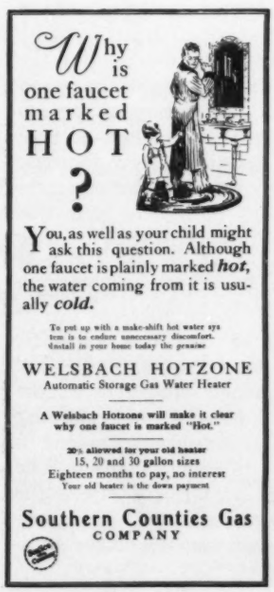
In other words, instead of waiting for our consumers to come to us to buy, we carried the sale to the home, making it easier for her to buy a $162.00, 45-gallon automatic storage gas water heater, than to subscribe to a monthly magazine. She visualized, perhaps for the first time in her life, luxurious hot water, plenty of it for her dishes, for the baby's bath, for every household use, and she could have it for little or no down payment with the most liberal terms extended over a year and a half. Would she take advantage of such an offer?

Ask Mr. Sidney Allender, whose water heater sales averaged better than one per day during a 13-week contest.

Up to the opening of the campaign, our sales had been drifting along, averaging between four and five heaters per week. The first week of the contest netted 23; the second week 30; the third week 32; and the fourth week 34; a consistent healthy increase. At this time we

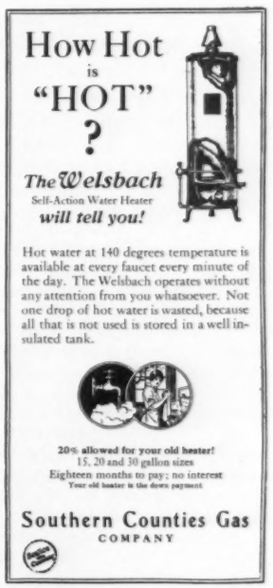
(*Continued on Page 54*)

Here are some samples from the carefully planned barrage of advertising laid down as a part of the Southern Counties Gas Company water heater sales drive


Why is one faucet marked HOT ?
You, as well as your child might ask this question. Although one faucet is plainly marked hot, the water coming from it is usually cold.
To put up with a make-shift hot water system is to endure unnecessary discomfort. Install in your home today the genuine
WELSBACH HOTZONE
Automatic Storage Gas Water Heater
A Welsbach Hotzone will make it clear why one faucet is marked "Hot."
20% allowed for your old heater
15, 20 and 30 gallon sizes
Eighteen months to pay, no interest
Your old heater is the down payment
Southern Counties Gas
COMPANY

Now!
Hot Water!
—when you want it!
From kitchen sink to baby's bath—
—HOT WATER! Not a luxury, but an every-day necessity to the comfort and health of your family
Welsbach HOTZONE
Self-Acting Gas Storage Water Heater Costs $92.00 installed. 20 per cent for your old heater as the down payment. Balance in
MONTHLY PAYMENTS OF
$4.09
BUY A WELSBACH TODAY!
Sold, Serviced and Recommended by
Southern Counties Gas
COMPANY

WANTED!
500 Old Water Heaters
If your heater is leaky, worn out, or unsatisfactory, let us have it as low payment on the self-action
Welsbach HOTZONE
Automatic Storage Gas Water Heater
20% for Your Old Heater
as the down payment—balance in monthly installments of
$4.09
Dismiss the hot water problem. Buy a Welsbach today!
Southern Counties Gas
COMPANY


How Hot is "HOT" ?
The Welsbach
Self-Action Water Heater
will tell you!
Hot water at 140 degrees temperature is available at every faucet every minute of the day. The Welsbach operates without any attention from you whatsoever. Not one drop of hot water is wasted, because all that is not used is stored in a well insulated tank.
20% allowed for your old heater!
15, 20 and 30 gallon sizes
Eighteen months to pay; no interest
Your old heater is the down payment
Southern Counties Gas
COMPANY

New Business *and* Rate Structures

By F. M. BANKS
Assistant General Manager,
*Central Counties Gas Company**
Visalia, California

VOLUMES have been written concerning rate structures. Discussions and articles on rates predicated upon some basis of cost allocation are numerous. Gas associations have gone on record as favoring rates of this type. Regulatory bodies have accepted or inaugurated them in several instances. In the past months some progress has been made by the gas industry in the number of such rates placed in effect, but in general the industry is even now very slow to accept cost allocation rates.

NEED FOR COST ALLOCATION RATES

The question may well be asked, "Why the need for this type of rate; what is wrong with our present rates?"

The A. G. A. Committee on Rate Fundamentals expresses the need as follows:

1. "As a protection"—against decreased revenue from certain types of loads without corresponding decrease in expense. Quoting again, "It is becoming more and more desirable that gas rates take into account the cost of service, not only in the aggregate and as to each class of customer, but to individual types of customers."
2. "As a correction"—to avoid excessive and non-competitive rates to profitable customers who must bear the expenses of non-profitable customers.
3. "As an inducement"—to every customer to use additional gas at a relatively low added cost.
4. "As an economy"—in obtaining a better system load factor with the benefits of attendant economies.
5. "As an attraction to additional industrial gas business." These five points express concisely the necessity for better forms of rates.

REASONS FOR INACTION

By many utilities this necessity is recognized as such, and yet they may hesitate for various reasons to instigate changes. The prevalent reasons have been listed by the 1926 Rate Structure Committee of the A. G. A. as follows:

"1. Because the volume of business and type of load which it sells still renders what is considered a satisfactory return, and/or

"2. Because the company hesitates to disturb a local situation which has always been, or at least is at present, reasonably stable, with a possibility of precipitating one concerning which there is considerable of uncertainty, and/or

"3. The company feels that if the rate (with a fixed charge element) is accepted, that the smaller customers will be driven from the mains with a resulting loss of revenue from gas sales, and/or

"4. That the general public reaction to the proposed rate will be so unfavorable as to lose for the company its good will with the public served, thereby forcing it into endless litigation if it would maintain firmly its purpose in introducing the rate proposed."

* Delivered at the Pacific Coast Gas Association convention, Santa Cruz, Calif.

F. M. Banks

These may not be all of the reasons nor may they all be operative in any particular instance. However, there have been numerous instances of successful application of two and three part rates as such by the electric industry, but rates need not take the form of two or three part rates even though they are based upon proper cost analysis.

RATE FORM

The question of rate form is one which causes no little discussion. On this subject we quote again from the work of the same A. G. A. Committee as follows:

"Forms of rates have almost always an historical background; what is altogether acceptable to one community may arouse irritation and provoke complaint in another. With all of these local conditions, wise company management will deal tactfully and will introduce the necessary adaptations of rate structures to minister to the local point of view as well as to the local needs and conditions. There is no disposition on the part of this Committee to urge rigid uniformity or the complete standardization of rate structures throughout the country. The purpose rather is to outline principles and expedients which may prove a useful guide in the development of better forms of rates, leaving to the directorate and management of each company (subject to regulatory consideration in proper cases) the determination as to the form in which, and the extent to which, these equitable principles shall be carried forward at any particular time.

"The three cost principles may be expressed as an out and out three-part rate, but many companies prefer to simplify the form by combining two or more of the charges. The actual form of the three-part rate, as generally used, is as follows, the figures being given merely as examples:

1—Customer Charge,
Per meter, per year.....$12.00
(Payable in equal monthly installments)

2—Demand Charge,
Per 100 cu. ft. of maximum hourly demand, per year.....$30.00
(Payable in equal monthly installments)

3—Commodity Charge,
Per 100 cu. ft. gas sold.....$0.60

"In this form of three-part rate, the twenty-four hour demand cost is absorbed in the hourly demand charge or in the commodity charge, usually the latter.

"There are many ways of modifying the above form, of which the following are examples:

a. The use of some other term for demand charge, such as reservation charge, capacity charge or fixed charge.

b. The grouping of the customer and demand charges into one amount, resulting in a customer charge, capacity charge or community charge, somewhat as follows:
   1. Capacity Charge,
      For the first 40 cu. ft. or less of maximum hourly demand per year $24.00
      For all additional maximum hourly demand, per year, per cu. ft. .....$ 0.30
      (Payable in equal monthly installments)
   2. Commodity Charge,
      For all gas sold, per 100 cu. ft..$ 0.06

c. The inclusion of the customer charge as part of the charge for the first few hundred feet of gas, either with a separate demand charge or with the demand charge also included as per the following:
   For customers with demands of 40 cu. ft. per hour or less;
   For the first 100 cu. ft. or less of gas each month $2.06
   For each additional 100 cu. ft.....$0.06
   For customers with demands of over 40 cu. ft. per hour, the charge of $2.06 for the first 100 cu. ft. or less used each month will be increased at the rate of $0.25 for each 10 cu. ft. of additional hourly demand.

d. Both the demand and commodity charges may take the block form, setting up different amounts for succeeding blocks of demand or consumption.

e. The demand charge may be expressed on a daily rather than on an hourly basis or with a combination of the two methods.

f. The demand and customer charges may be spread over a six or eight months period for seasonal business, such as house heating."

Another method of providing for the demand or capacity cost is its inclusion in the commodity or output charge as exemplified by the Wright Demand type of rate. In the development of domestic service and some of the smaller commercial usages, it has been held that this form of rate is most satisfactory. The Wright Demand type of rate makes it entirely possible to credit the individual consumer for his longer hours of use of connected load or installed capacity. Further, this type of rate eliminates the so-called objectionable statement of the reservation or demand or standing charge which is so obtrusively evident in the two-part or three-part rates. The basis of this type or form of rate is the tri-part cost analysis adapted to the conditions of load and service of the individual company.

Demand may be determined in numerous ways, as follows:

1—Considered alike for all domestic customers.
2—Size of meter.
3—Periodic tests.
4—Rated capacity of appliances.
5—Same as above, but considering seasonal use.
6—Maximum flow from appliances connected.
7—Measurement of actual flow continuously.
8—For special business, according to floor area, number of rooms, or radiating surface.
9—Demand limiting devices.

Aside from a consideration of inadequate returns from the oft - mentioned "convenience customer," there should be just two possible rate limitations or extremities:

1—Cost of service.
2—Competitive ability to pay.

Cost of service is considered to be the total actual cost of serving the business to which the rate may apply. In the final analysis, true cost of service may be arrived at only by considering the cost of serving all of the business of the territory in question. This is true not alone of the actual business served, but should consider all reasonably available business as well.

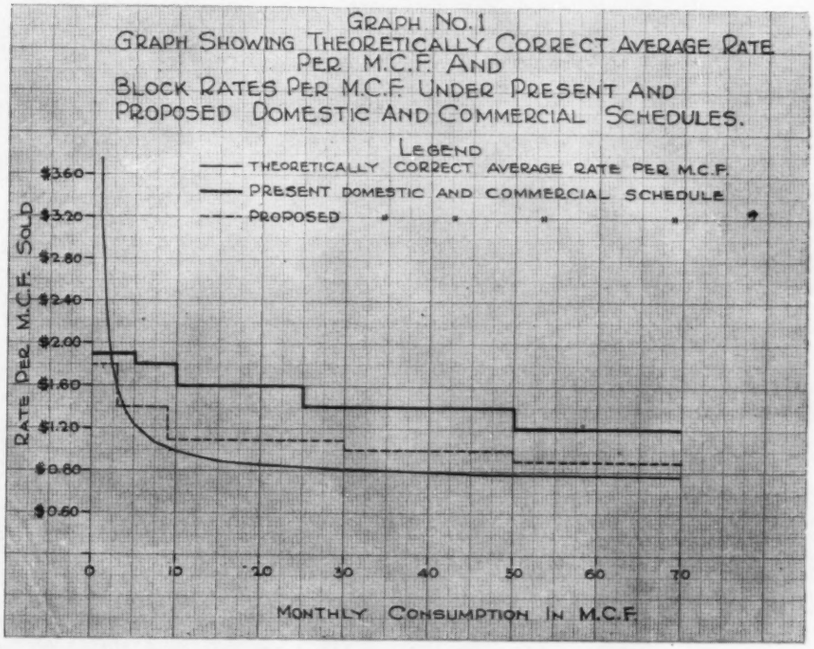
Competitive ability to pay is, regardless of cost of service, the price at which gas can be sold on the market for any particular service in competition with other fuels or energy supplies, considering all advantages of the so-called "form factors."

Obviously, no added business should be taken at rates which do not cover cost of service. However, cost of service cannot of itself determine the rate when the competitive ability to pay either exceeds or falls short of it. In this connection, the A. G. A. Committee on Rate Fundamentals has this to say:

"In the practical development of rate structures, the amounts of the various charges established therein are usually varied from the computed unit costs, in order to conform to other considerations, such as value of service, competitive conditions, and local preferences or predilections of view as to the form of rate, etc."

This paper was written with the hope that it might serve as a step in attaining better rate structures among the utilities of this association. Up to this point the attempt has been to hastily, yet logically summarize the purport of the large amount of material which has been presented on this subject.

It is entirely possible that in particular many of the smaller companies belonging to this association hesitate to consider changing to cost allocation rate bases because of the apprehension that the cost analysis is a needlessly, or at best a hopelessly involved procedure. With this in mind, they do not care to attempt to proceed. It is the intent in that which follows to display relatively simple, yet serviceably accurate methods of cost allocation, for the use of such utilities.



Graph No. 1

"RULE OF THUMB" COST ANALYSIS

In the allocation of Operating Expenses and Fixed Charges between Demand or Capacity, Consumer and Output Costs, several points of view or methods may be adopted as the base for the prorate. In general, company tri-part cost allocation may be made from some consideration of the following:

1. Segregation of expenses and fixed charges upon the basis of consumers' minimum and maximum demands (irrespective of time of demands), or consumers' minimum and maximum active connected load, or plant minimum and maximum sendout.

2. Segregation of expenses and fixed charges upon the relationship developed from a study of load factors and diversity factors of system and of the various classes of services.

3. Segregation of expenses and fixed charges upon the basis of the requirements to meet standby operation as indicative of the standing or reservation charge, with the balance of expenses assessable against Output and Consumer cost depending upon the nature of the expense.

4. Segregation of expenses and fixed charges upon the basis that the plant and system is available for delivery of gas at any and all times—the capacity basis.

In the preparation of a tri-part cost analysis many refinements may be practiced. A study may be made of the fixed capital assignable to the various classes of services and the Return and Depreciation can then be properly allocated. The larger companies have departments available for this work, but many of the smaller companies are hampered, due to lack of organization, in carrying out such a detailed analysis. In view of this, and the further fact that other elements besides Cost of Service enter into the adoption of rate schedules, it is sometimes questionable whether these refinements are necessary in order to obtain a usable schedule. For example, the Value of the Service is the predominating element that establishes the rate or rates that can be made effective for certain classes of industrial businesses. The determination of the theoretically correct rate schedules for this class of business is necessary, but it is only a stepping stone in order to set up a final rate schedule.

It is for these reasons that the following method of tri-part cost analysis —a more or less Rule of Thumb Method—is suggested for the derivation of a theoretically correct schedule. For simplicity of illustration, a small property, with an oil gas plant, has been used. All classes of Service and Customers are averaged and treated as having the same hours of use, load factor, diversity factor, etc. In this analysis the expenses have been segregated be-

(*Continued on Page 46*)

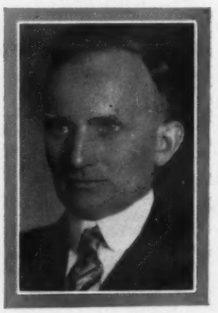
PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

New Committee Organization Is Nearly Perfected; Section Chairmen Named

W. E. Robbins

NOTWITHSTANDING the fact that two of the four chairmen of the Association's sections were required to take part in the program of the American Gas Association Annual Convention in Chicago early in October, the organization of committees has proceeded with more than usual rapidity and the complete committee personnel will be ready to publish in an early issue of WESTERN GAS. The programs of the Accounting, Commercial and Technical sections have been completed and furnished to all gas company members with the request that company executives appoint representatives on each committee whose subject is of interest to the company. Committees are being made up of the men so appointed, a chairman being selected for each committee by the Section Chairman. The program of the Public Relations Section is not only completed, but the majority of the appointments have been made and work is actively under way. An interesting phase of the Public Relations Section work this year is the Women's Committee headed by Ruth Creveling of San Diego.



D. L. Scott

PLAN PACIFIC COAST A. G. A. SALES CONFERENCE

The American Gas Association has complied with a request of the Pacific Coast Gas Association and plans are now being laid toward the organization of a Pacific Coast Sales Conference similar to those which have been so productive of good results in the east. As soon as a local committee can be appointed, dates and program will be arranged and announced on this page.

25TH ANNUAL CONVENTION DATES DECIDED

President L. M. Klauber, with the approval of the Board of Directors, has completed arrangements with Hotel del Coronado for the 1928 Convention of the Association. The dates selected are September 17 to 21, 1928, inclusive. Everyone who knows the excellent facilities and homelike atmosphere of this famous hotel will be pleased with this announcement.

VAN ZANDT RESIGNS AS ASSOCIATION DIRECTOR

Wynant Van Zandt has resigned from the directorate of the Pacific Coast Gas Association because of the fact that he contemplates leaving the gas industry. Mr. Van Zandt has just severed his connection with the C. B. Babcock Company, with which he has been associated for eight years, part of this time serving as assistant manager. The vacancy on the Board of Directors will be filled at the November meeting in San Francisco.

C. R. Miller

H. L. Masser

1927-28 Section Heads

ACCOUNTING SECTION

Chairman, W. E. Robbins, Auditor, Southern California Gas Company, 950 South Broadway, Los Angeles, California.

Vice-Chairman, B. H. Parkinson, Portland Gas & Coke Company, Portland, Oregon.

COMMERCIAL SECTION

Chairman, C. R. Miller, Superintendent of Utilization, Portland Gas & Coke Company, 234 Flanders Street, Portland, Oregon.

Vice-Chairman, C. H. Potter, Southern Counties Gas Company, 810 South Flower Street, Los Angeles, California.

PUBLIC RELATIONS SECTION

Chairman, D. L. Scott, Director of Public Relations, Los Angeles Gas and Electric Corporation, 810 South Flower Street, Los Angeles, California.

Vice-Chairman, A. E. Holloway, San Diego Consolidated Gas & Electric Company, San Diego, California.

TECHNICAL SECTION

Chairman, H. L. Masser, Gas Engineer, Los Angeles Gas and Electric Corporation, 810 South Flower Street, Los Angeles, California.

Vice-Chairman, Van E. Britton, Pacific Gas and Electric Company, Oakland, California.

SAN FRANCISCO MEETING NOVEMBER 17 AND 18

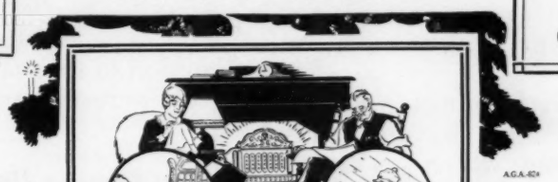
THE first Regional Conference of the year will take place in San Francisco on November 17 and 18. This will not only be an organization meeting for Association Committees, but will afford an opportunity for all members in Northern and Central California to hear some excellent and timely papers and to take part in discussing them. A general session of all present will be held in the Auditorium of the Pacific Gas and Electric Company on the afternoon of November 17 and on the morning of November 18 there will be simultaneous meetings of the Accounting, Commercial, Public Relations and Technical Sections at the Fairmont Hotel. These meetings will be followed by a luncheon and the afternoon will be devoted to such special section and committee meetings as are called by chairmen. A complete program of the conference will be mailed out from the Secretary's office early in November.

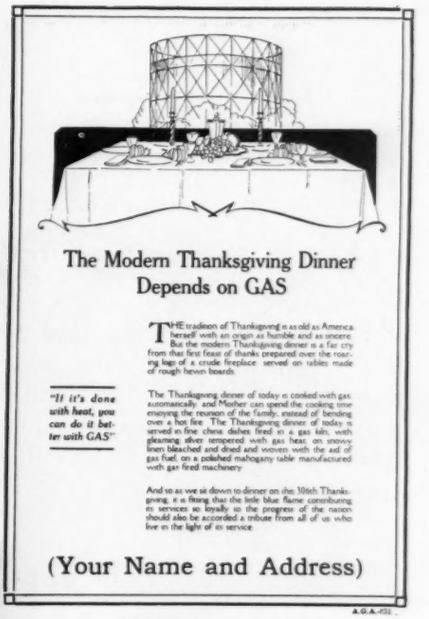
Other conferences during the year will be held in Los Angeles and in Vancouver, B. C.

Kitchen Help for Crowded Days
"GETTING ready for Christmas" with all the important sewing to be done, gifts to be wrapped and mailed, the house to be decorated, last-minute shopping to be done this is the time of the year when the regular three meals a day might certainly become hastily prepared snacks or cold bites if the oven heat regulator on the gas range didn't "mind the cooking" and leave the housewife free to go about her Christmas preparations. Hot, nourishing meals can now be as much a part of the pre-Christmas program as the big dinner itself is a part of Christmas day
Gas Ranges
complete with Oven Heat Regulators
A.G.A.-622

Two Signs
of a good dinner
for Thanksgiving
A FAT turkey gobbler is half the story. the other half is in the cooking of him, bringing him to golden, juicy perfection!
And that's the part that the Blue Star Seal plays in the preparation of Thanksgiving dinner. This emblem of efficiency on a gas range means that it has been tested and approved in the laboratories of the united gas industry. It denotes safety, reliability, durability, performance and is placed there as a seal of service—your guarantee that the range you buy has passed rigid requirements prescribed by the U. S. Bureau of Mines, Standards, the U. S. Bureau of the U. S. Public Health Service and the American Gas Association
Look for the Blue Star Seal of Approval when you buy your new gas range
(Your Name and Address)
A.G.A.-622

"Christmas Gift!"
HOW merry the old greeting rings out on Christmas morning, and how much more joyous if it means a gift of happiness for every day in the year as well as Christmas day. To the home maker of the family, this sort of a gift is a household gas appliance that helps her in her daily work, relieves her of drudgery keeps her young. These are the things she'd really like the most.
A New Gas Range
A Gas Ironer
A Gas Space Heater
Come in today and select a "helping" gift for her, and thereby make her Christmas last all year
[Your Name and Address Here]


"In the Gloaming"
when the old folks love to spend the evenings before a warm fire, think what help and comfort a gas radiant heater would bring to them. Just to save Grandfather those cold trips back and forth to the wood pile or the coal bin and Grandmother that never-ending task of keeping the floor swept up around the stove, would make the gift of a gas radiant heater more than welcome in the old home
This year give the folks a
Gas Radiant Heater
and thereby bring to them real holiday cheer and warmth
(Your Name and Address)
A.G.A.-623


The Modern Thanksgiving Dinner Depends on GAS
"It it's done with heat, you can do it better with GAS"
THE tradition of Thanksgiving is as old as America herself with an origin as humble and as sincere. But the modern Thanksgiving dinner is a far cry from that first feast of thanks prepared over the roaring logs of a crude fireplace served on tables made of rough hewn boards
The Thanksgiving dinner of today is cooked with gas automatically, and Mother can spend the cooking time enjoying the reunion of the family, instead of bending over a hot fire. The Thanksgiving dinner of today is served in fine china dishes fired in a gas kiln, with gleaming silver tempered with gas heat on snowy linen bleached and dried and woven with the aid of gas fuel, on a polished mahogany table manufactured with gas fired machinery
And so as we sit down to dinner on the 10th Thanksgiving, it is fitting that the little blue flame contributing its services so loyally to the progress of the nation should also be accorded a tribute from all of us who live in the light of its service
(Your Name and Address)
A.G.A.-631

Everything Ready
for Christmas at Our Store
WE know you're already thinking about gifts and Christmas shopping, and we want to invite you here tomorrow—our Holiday Opening Day—because we believe you'll get some helpful suggestions. You've no idea how many really usable gifts we've assembled for this exhibit. And if you're considering a family present—one of those worthwhile gifts-for-the-home that all can use and enjoy—you may find just what you seek here without any tiresome search elsewhere
"Give a Gas Appliance Gift"
A radiant heater for a bather
A gas heated ironer for relief from hard work
A white enamel gas range for Mother
A new, style 600 lamp for greater reading comfort
A hot water system to save everybody's temper
Something useful from our kitchenware section
Convenient terms as usual
(Your Name and Address)
A.G.A.-631

Feature the Seasonal Appeal in November Selling

ABOVE is a group of advertisements prepared by the American Gas Association Advertising Service. This "copy" can be used to advantage by gas companies in the seasonal merchandising activity which should accompany Thanksgiving and Christmas.

Each year finds more and increasing impetus being given to this seasonal appeal by gas companies. Newspaper and magazine advertising is used to attract the prospective purchaser of gifts. Window and floor space is utilized with appropriate displays. Bill inserts bring to the attention of the recipient a special holiday offering of gas appliances, with an attractive trade-in value. Long term payment plans are announced and withal, every possible sales stimulus is brought to bear.

Each of the above shown advertisements is keyed and one or all are available to the gas merchandiser who will order them from the A. G. A. Advertising Service.

The portfolio containing the holiday advertising reproduced above contained four live suggestions for Thanksgiving and Christmas windows. Quoting the A. G. A. Advertising Service Bulletin for November:

I

"Here's a good gas range window trim suitable for Thanksgiving. Decorate the window to represent the corner of a grocery store interior, showing the counter and on it a market basket loaded with the makings of a Thanksgiving dinner. Behind the counter place shelves of staple canned goods and perhaps in the foreground a basket of potatoes and one of cranberries. Opposite this in the window display your finest white enamel gas range and in the center a card reading 'The success of the feast depends on the COOKING as well as on the marketing. This year cook on a Gas Range and save yourself hard work.'"

II

"This idea will also be effective for Thanksgiving. Have a giant pumpkin pie painted on wall-board, just as big a one as can fit into the window. It should be slashed in the center and a gas range placed partly through the opening. A card tied to the range should read 'Yours for a real Thanksgiving Feast. Come in and look me over.'"

III

"A good pre-Christmas advertisement might be arranged in this manner.

(Continued on Page 71)

EDITORIAL

Bidding for the House Heating Load

OIL burner manufacturing interests profess to see in the extension of the oil house heating market a solution to the overproduction evil which periodically besets the petroleum industry. Logically enough they are seeking the co-operation of oil producing and marketing companies in their program of educating the public to oil as a house-heating fuel, and the co-operation is being rendered. Seven or more of the country's largest petroleum operators subscribed to the American Oil Burner Association program this year, and more help is in sight for 1928.

Evidently the oil and oil burning appliance industries have been confronted by the handwriting on the same wall from which gas utility executives have been reading in late years. If production capacity is to be utilized, the development of new markets, and the more intensive sale of old ones are the factors that will make it possible—and this holds for oil as well as gas.

As oil companies put their weight behind the development of the house-heating load, their efforts will undoubtedly come to the surface in the form of more co-operative national consumer advertising, in which the oil burner men have already made a beginning. In connection with national advertising of oil or any other type of fuel for house heating it seems in point to make two observations; first, that national advertising of gas through a campaign set up to carry over a number of years, is one of the industry's crying needs; second, that competitive advertising is a menace *only* if we choose to let it be. More advertising of the comforts of modern house heating means more people receptive to direct salesmanship of efficient house heating systems. Gas companies with a sales and rate structure which will allow them to bid for this load will demonstrate in increased house heating send-out the general economic truth that competitive advertising can be a positive asset.

The Joint Committee's Program

IN the formation of the Joint Committee of National Utility Associations there has been set up an agency through which the utility industry may present its case against socialization of industry to the public. P. H. Gadsden, vice-chairman of the Committee, gave a stirring suggestion of its purposes and program in his remarks before the National Symposium of Public Utility executives, at the A. G. A. convention.

The Committee's intention, said Mr. Gadsden, is to give a true picture of the public utilities of the country to those who benefit from their services; to reflect a twenty billion dollar industry, employing a million workers, and numbering its securities holders approximately five million. Far from setting up a lobby at the national capital, the Committee proposes to go direct to the electorate with this utility picture, and "depend on the backfire of sound business opinion to see that no legislation inimical to this great industry is had."

West Coast to Have Laboratory Representative—Also a Sales Conference

PACIFIC Coast gas appliance manufacturers, and the Coast industry generally, take considerable interest in the announcement that a representative of the American Gas Association Testing Laboratory is to be permanently assigned to this Western territory, assuming his post early next month. Kendall H. Flint, who will undertake this work, has been with the Laboratory at Cleveland practically from its organization and will bring a first-hand knowledge of its policies and procedure to the Coast.

In spite of the distance separating the Pacific Coast and the Laboratory, and the unique gas service conditions in some sections of the West, the Blue Star Seal of approval is rapidly being accorded to many Western gas appliance lines. Location of a Laboratory representative on the Coast will greatly facilitate preliminary work of preparing new lines for test, will speed up the extension of approval to additional models of appliances already approved in one size, and in more ways than one will smooth out the process of getting Laboratory approval for Western-made appliances.

Another activity which will shortly extend the A. G. A. program in the West is announced in this issue. At the request of the Pacific Coast Gas Association there is being planned a Pacific Coast Sales Conference. Last year the A. G. A. inaugurated its Mid-West Sales Council, which has already done creditable work, and the inclusion of the "Far West" in the A. G. A.'s successful sales conference program should be hailed with as general approval.

This orderly and well equipped field headquarters, located in the heart of Long Beach oil fields, was constructed by the California Gasoline Company in 1926. It is described in the article below

Modern Field Headquarters Has Large Place *in* Successful Natural Gasoline Program

By HARVEY S. HOLLOWAY
Assistant General Field Superintendent
California Gasoline Company

TENDENCIES in modern industry point toward the formulation of ways and means of centralizing organization activities around a focal point in such manner that the minimum of admistrative effort is involved in handling the daily operations of a highly active industry.

The California Gasoline Company is typical of several such companies engaged in the manufacture of natural gasoline in California, and the growth of the company from a one plant operation to that of twelve plants within a five-year period is a fine example of progress. Gasoline plants operated by the California Gasoline Company are situated in Athens, Signal Hill, Huntington Beach, Santa Fe Springs and the Montebello fields in the Los Angeles Basin; also two plants in Ventura County, one each at South Mountain near Santa Paula and at the Shiells Lease near Fillmore.

As a consequence of such growth and to facilitate operations as well as care for future expansion, a field headquarters of a modern type was built in September of 1926 in Long Beach, California. At this headquarters is a general field office, laboratory, warehouse, automobile repair shop, meter repair shop, machinery repair shop, paint shop, pipe racks, automobile storage for company owned cars, and parking space for employees' cars, all located within an area of approximately five acres in a manner that allows ample room for expansion without crowding structures previously built.

GENERAL FIELD OFFICE

The general field office, of frame construction, is fully plastered inside, the interior trim being of best grade Douglas fir, stained and varnished in pleasant contrast to the golden oak office furniture provided throughout. The floors are also of a good grade of Douglas fir covered with a high grade "Battleship" linoleum. The building is well provided with exterior openings that furnish an abundance of sunlight to all offices, and in addition thereto is well equipped with electric lighting. The best of sanitary conveniences are provided, the building being constructed in accordance with the building codes in every particular. The exterior of the building is covered with lap siding, and well painted, the roof being of asbestos shingles. Also, the building is heated by a warm air system that is electrically controlled and operated.

In the field office are housed the field accounting department, offices of the superintendent of production, pipe lines, and tests and gas measurement, drafting room, telephone exchange, and other offices incidental to the aforementioned.

The field accounting department handles the timekeeping of the field forces, the checking and distribution of all material, invoices and warehouse charges, keeps warehouse stock records, computes all orifice meter charts covering gas measurement, prepares statements of daily production and all details that are fundamentally field office routine. In this manner the field office is in direct contact with operations to the extent that such problems as arise in accounting procedure are readily adjusted in the field.

The office of the production superintendent, located in this building, is in direct communication with all plants, within the area mentioned, by private telephone line. Thus the governing of plant operation is handled expeditiously, the operations being directly under the production superintendent's jurisdiction.

Here also is found the superintendent of tests and measurements, who has charge of all laboratory routine, gas testing, gas meter maintenance, chart collecting, and all details incident to such work. He is in direct contact with the forces under his control, and due to such

California Gasoline Company's Laboratory, at field headquarters.

arrangement, all work of this nature is organized to such an extent that a high plane of efficiency is obtained.

The pipe line superintendent, in whose hands rests the direction of pipe line construction, repairs, maintenance, and gas transmission problems, is so situated through the office maintained that all such work is directed with the best of results due to the familiarity born of day-to-day knowledge of field conditions.

Through the telephone exchange located within the field office immediate communication is possible with all plants, fields, and the company's Los Angeles office, by company telephone lines. In addition thereto, the public utility system is also available.

The warehouse is of frame construction, sheathed and covered with the usual corrugated iron, the building being generally designed to accommodate heavy and light materials alike. Upon each end of the building are platforms for the loading and unloading of supplies. The interior is provided with shelving and bins for stock that is ordinarily stored in such spaces, with ample floor space for heavy machinery parts, fittings, etc.

WAREHOUSE IS IMPORTANT UNIT

As its name implies, the warehouse is the point at which all materials and supplies are dispensed, for all classes of operations. The volume of warehouse stock required, materials issued as well as requisitions for new materials, requires the services of a competent storekeeper and assistants whose offices are in a part of this building.

Occupying two other offices within the warehouse building are the superintendents of the mechanical and construction departments respectively. The superintendent of the mechanical department has charge of all repairs and maintenance work on engines, compressors, pumps, boilers and other power equipment. The construction department, through its superintendent, handles all new plant construction, repairs and maintenance to plant buildings, plant equipment other than machinery, yards and painting. Thus it is readily seen that these offices and their respective organizations function along lines of good economic principle due to the close co-operation obtainable between working forces, superintendents and warehousemen in handling materials for work undertaken.

The laboratory building is of hollow tile construction plastered on the exterior with plastic cement and brush coated in keeping with the field office, and the roof is of asbestos shingles over a wood frame, the structure being semi-fireproof. The interior is fully plastered and finished similar to the field office building and is divided into a gasoline and oil distillation laboratory, charcoal distillation laboratory, analytical laboratory, balance room, stock room, chief chemist's office, research laboratory and other small rooms.

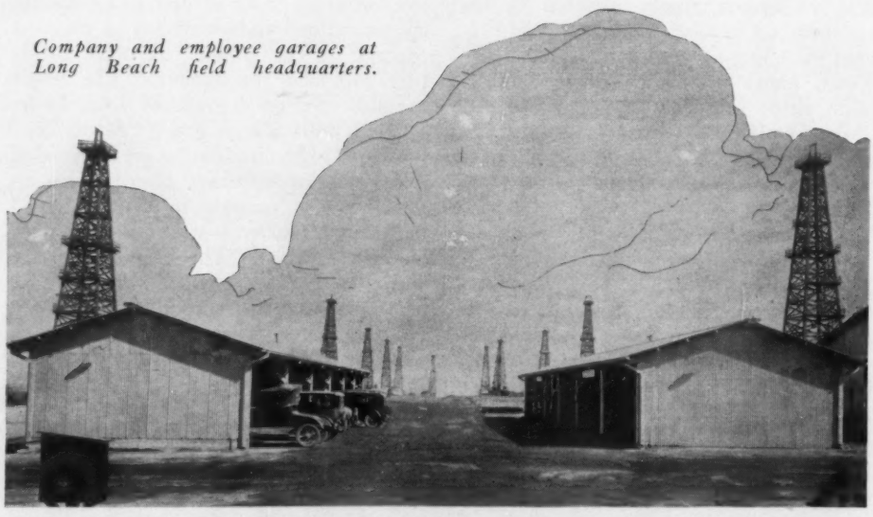
FIELD LABORATORY'S FUNCTIONS

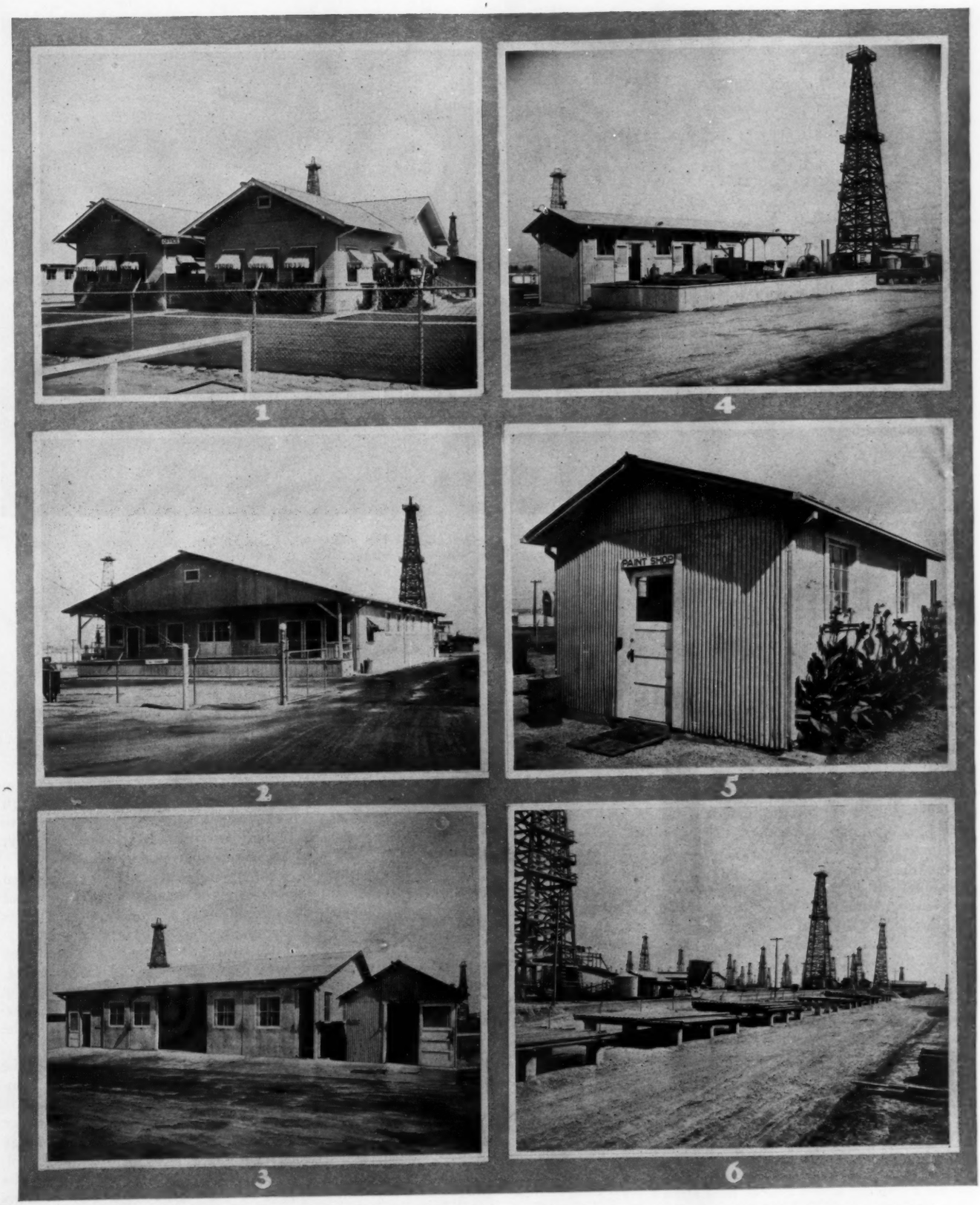
In this building is handled all such routine plant tests as are required in daily operations, all charcoal tube distillations, gas analyses of many kinds, special tests and research problems. To cover the work handled in this one department with a few words is difficult. The amount of detail involved is such that a separate article could be written relating to the laboratory work. However, all of the laboratory work involved in field and plant operations is run through this central laboratory. As a result, the man hours required to handle a large volume of work are so distributed and systematized by the use of sufficient high standard equipment that results obtained approach the acme of economic achievement.

The garage building is also of frame construction, covered with corrugated iron on walls and roof, and has concrete floors throughout. The shop is well lighted and ventilated, providing good conditions for workmen employed in automobile repairs and maintenance. The repair shop is well provided with tools and equipment such as are used in the up-to-date commercial garage. Washing and greasin gof all company vehicles is systematically handled so that once each week every car or truck is serviced in this respect. Gasoline and lubricating oil are dispensed in conjunc-

(*Continued on Page 58*)

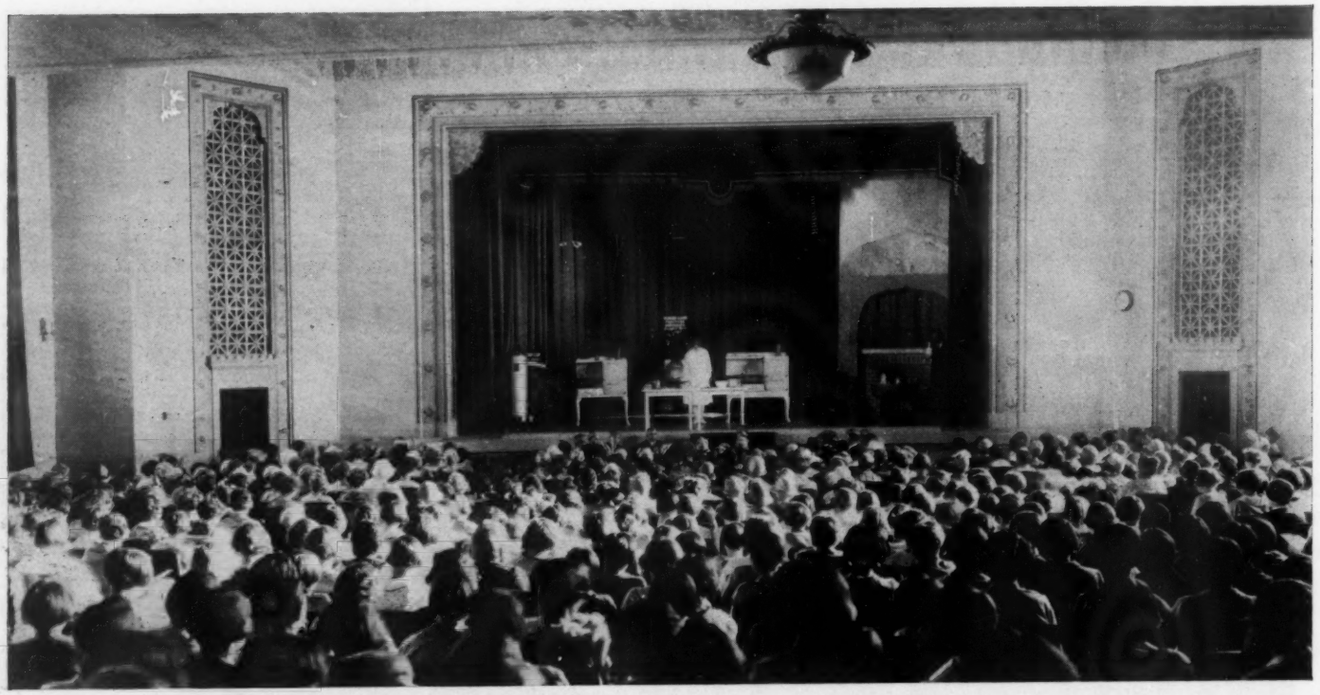
Company and employee garages at Long Beach field headquarters.





VIEWS AT CALIFORNIA GASOLINE COMPANY'S LONG BEACH FIELD HEADQUARTERS

1. Field headquarters office. 2. Warehouse, from which a wide range of materials used in natural gasoline plant operation is distributed. 3. Meter shop at left, auto repair shop and wash rack at center, oil house at right. 4. Heavy material platform, construction and pipe line department tool rooms, and mechanical department repair shop. 5. Paint shop. 6. Pipe racks, showing approximately 50,000 feet of pipe storage capacity



Women and high school girls of Turlock, Calif., crowded the sessions of the gas cooking course held in October, as shown by this view of one day's attendance

Putting the Cooking School *Over* in the Small Community

By H. ELLIOTT TAYLOR

SUCCESSFUL cooking schools, featuring gas appliances and the economies and conveniences of gas fuel, are bound to react to the good of the local gas company, whether they are conducted by the company itself or are under the auspices of other community organizations.

Cooking schools to be of most value cannot all be cut out of the same pattern. The school which will succeed in the metropolitan center does not necessarily appeal to a more rural community with the same success. Those directing cooking schools will do well to begin with a preliminary analysis of their community, to determine the exact type of course needed, and to select the most effective means for popularizing the school and securing the all-essential attendance.

In Turlock, Calif., a town of some 5000 people, there has just been completed a cooking school course, held from October 18 to 21 inclusive, and the following description of the methods followed is offered as typical of what can be done in the small community to put the gas company cooking school over.

In the first place, the "set-up" chosen for the school was calculated to appeal to the attention of the entire community. At the outset the gas company saw the mutual advantages of securing the active co-operation of the Turlock Women's Club, an organization which in its membership represents the most progressive families of the community. It was therefore wisely decided to subordinate the gas company and by arrangement with the Women's Club the school was offered under the auspices of that body, as well as those of the local high school, with the Turlock Gas Company co-operating and furnishing active direction of the school through W. J. Lane, superintendent. All efforts were centered upon making the event fill an educational need, with good cookery and the conservation of gas the direct objectives. Since the school concerned the Women's Club, it was given unusual publicity, and at the same time the gas company was strongly enough identified with the enterprise so that its patrons would link the lessons in efficient cooking and good gas service with their local utility.

Preparations began well in advance of the date for the school. A coupon drawing, and an essay contest for high school girls were two features used to stimulate interest, and these made part of the newspaper publicity used.

Two thousand circulars were printed announcing the school. At one end of the circular was a coupon for the prize drawing, as shown on the accompanying illustration. These were distributed several days before the school opening, and then again the day preceding the opening, so that every housewife in Turlock could be expected to know of the event.

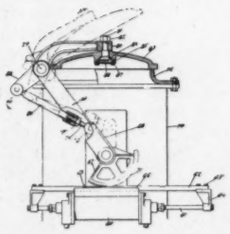
No avenue to the attention of the women was overlooked by the gas company. Ministers of the 20 churches in the community were asked to announce the course in cooking to their Sunday congregations a week before the school. Announcement was also made in all the classes of the high school, and students urged to spread the word to their homes.

Good showmanship plays a large part in putting on the live cooking school, and in recognition of this fact the Turlock Gas Company arranged for special music furnished by a local orchestra,

(*Continued on Page 56*)

THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

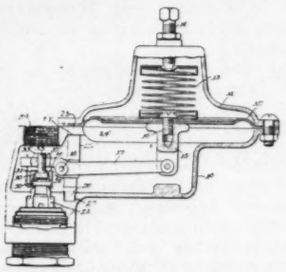
1,605,083. GAS MANUFACTURE. Sydney R. Tymstra and Olav Twiet, Detroit, Mich., assignors to Steere Engineering Company, Detroit, Mich., a Corporation of Michigan. Filed Mar. 2, 1925. Serial No. 12,529. 5 Claims. (Cl. 137—139.)



1. In combination, a shaft, means for moving the shaft, an arm mounted on said shaft, one of more plates having a socket in the center thereof, securing means positioned in said socket and loosely fastening said plate to said arm to allow limited movement of said plate on said securing means and a cover placed over said socket to prevent leakage.

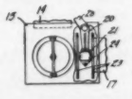
5. In combination, shaft supports, a shaft positioned therein, a hydraulic cylinder, a piston rod extending from both ends of said cylinder, means for reciprocating said rod in said cylinder, a rack placed on said piston rod, a pivoted sector gear having a lever integral therewith meshing with said rack whereby said gear can be rotated back and forth by said piston rod, a toggle bolt fitted on to said lever, a rod secured to said bolt and a lever positioned on said shaft that connects with said rod so that said shaft can be rotated when said gear is rotated.

1,618,396. GAS-PRESSURE REGULATOR. James M. Wilkins and Louis N. Rohs, Decatur, Ill., assignors to Adolph Mueller, trustee, Decatur, Ill. Filed Apr. 8, 1924. Serial No. 705,019. 21 Claims. (Cl. 50—26.)



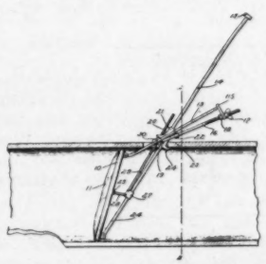
3. In a pressure regulator, the combination of a casing enclosing a regulating apparatus including a movable valve support, a valve carrying pin on said support, a valve mounted on said pin, a removable seat engaging member on said valve, and spring means for retaining said member on the valve engaging the face of said member at its margin only.

1,605,081. GAS MANUFACTURE. George R. Steere, Owosso, and John B. Esselen, Detroit, Mich., assignors to Steere Engineering Company, Detroit, Mich., a Corporation of Michigan. Original application filed Sept. 16, 1924, Serial No. 737,656. Divided and this application filed Mar. 9, 1925. Serial No. 13,968. 3 Claims. (Cl. 277—5.)



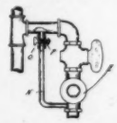
1. A valve of the class described comprising a pair of plates, a web having a knob at approximately the center thereof joining said plates together at their centers, an opening in said knob of greater diameter at its outer edges than at its inner edges and a bolt extending through said opening and secured to a movable element.

1,627,502. GAS-MAIN STOPPER. Patrick Goodman, Brooklyn, N. Y. Filed Oct. 26, 1926. Serial No. 144,340. 4 Claims. (Cl. 137—76.)



1. A gas main stopper including an expansible frame, means on the frame to effect the stoppage of the main, handle bars on the frame, means to cause expansion of the frame by a longitudinal movement of one handle-bar, a sleeve adjustable along one handle bar and a bracing connection between said sleeve and said frame, said bracing connection being additional to said expansion means.

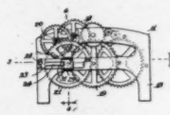
1,625,874. GAS VALVE. Frank W. Shuell, Detroit, Mich., assignor to Ever Hot Heater Company, Detroit, Mich., a Corporation of Michigan. Filed Feb. 4, 1924. Serial No. 690,614. 1 Claim. (Cl. 236—83.)



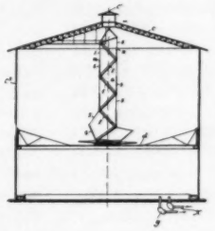
The combination with a gas burner, a supply conduit therefor and a thermostatically operated valve for varying the supply, of a by-pass conduit around said valve, a plug in said by-pass conduit rotatable about an axis transverse to said conduit, said plug having a laterally extending full circular opening therethrough adapted to extend axially of said conduit, said opening being calibrated to limit the amount of gas passing therethrough to that necessary for supplying the pilot light for the burner.

1,627,183. RESETTING DEVICE FOR GAS METERS. Ernest A. Kerstein, Brooklyn, N. Y., assignor to American Meter Company, Incorporated, New York, N. Y., a Corporation of Delaware. Filed Apr. 25, 1925 Serial No. 25,936. 1 Claim. (Cl. 235—144.)

A resetting device comprising a part capable of being pivotally mounted, said part having a flexible member and a finger-piece and being cut away; and a retainer with respect to which said part is movable, said retainer having abutments with which the extremity of said flexible member is adapted to coact to prevent the movement of said part with respect to said retainer.

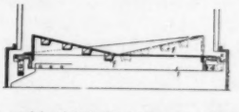


1,636,963. SCALING MEANS FOR USE IN GASOMETERS INCLOSING A VERTICALLY-SLIDABLE BODY. Konrad Jagschitz, Mainz, Germany, assignor to Maschinenfabrik Augsburg-Nuernberg A. G., Nuremberg, Bavaria, Germany, a Corporation of Germany. Filed July 7, 1923, Serial No. 650,020, and in Germany Feb. 5, 1923. 10 Claims. (Cl. 48—176.)



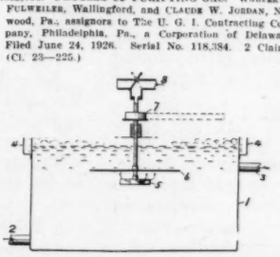
10. A scaling means for a gasometer consisting of a tank having a crown provided with a manhole, and a slidable closure within said tank arranged to rise and fall therein; comprising a collapsible member depending from said crown to said closure and automatically extensible and foldable as said closure moves downwardly and upwardly within said gasometer, and tread members on said collapsible member to provide access to said closure through said manhole at all times.

1,645,671. SELF-SCRAPING HEARTH FOR GAS GENERATORS AND OTHER FURNACES. Léon Thirois, Brussels, Belgium. Filed June 16, 1925, Serial No. 37,538, and in Belgium June 24, 1924. 4 Claims. (Cl. 126—182.)



1. A revolving hearth for gas furnaces and the like comprising a plurality of sections, each of said sections comprising a surface generated by a line one end of which pivots at a point at the hearth center and the other end follows an outer directing curve at the hearth periphery, said outer curve being at a higher level than the pivotal center, whereby the fuel is prevented from moving outward under the action of centrifugal force.

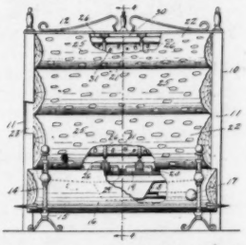
1,632,758. PROCESS OF PURIFYING GAS. Walter H. Fulweiler, Wallingford, and Claude W. Jordan, Norwood, Pa., assignors to The U. G. I. Contracting Company, Philadelphia, Pa., a Corporation of Delaware. Filed June 24, 1926. Serial No. 118,384. 2 Claims. (Cl. 23—225.)



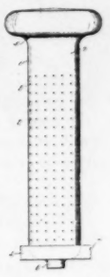
1. In the process of purifying gas the improvement in revivifying the foul solution of alkali sulphydrate which consists in stirring the solution with a rapidly moving immersed paddle, passing finely divided air through the solution by introducing air under the paddle, and selectively controlling the sub-division of the air by the speed of the paddle and the depth of its immersion and the supply of air

1,618,477. GAS-LOG HEATER. Theodore A. Sale, Dallas, Tex. Filed July 21, 1925. Serial No. 45,008. 3 Claims. (Cl. 126—92.)

1. In a gas log heater, a support comprising opposite uprights having inwardly directed channels, andirons connected with the support, a hollow base mounted on the andirons in front of the support, burners in said base, a back member extending above the base and having side flanges in said channels, and a radiant front member mounted upon the base in spaced relation to the back member and having cooperating flanges within said channels, whereby a flue is formed extending from the burners in the base to the top of the heater.

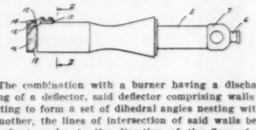


1,636,643. GAS BURNER FOR HEATING PURPOSES. Luigi Morabito, Port Chester, N. Y. Filed Sept. 29, 1926. Serial No. 138,441. 4 Claims. (Cl. 158—99.)



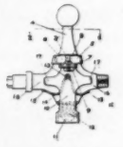
1. A gas burner comprising a tubular body portion provided with spaced rows of circumferentially extending openings, a solid, heat radiating head integral with one end of said body portion and of greater diameter than the latter, and a chambered base of greater diameter than and integral with the other end of said body portion, the chamber of the base opening into the body portion, and said base having a nipple extended therefrom adapted to couple a gas supply pipe therewith.

1,618,269. GAS-BURNER DEFLECTOR. Stephen A. D. Cox, Huntington Beach, Calif. Filed Dec. 16, 1925. Serial No. 75,722 4 Claims. (Cl. 158—113.)



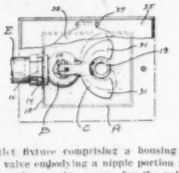
1. The combination with a burner having a discharge opening of a deflector, said deflector comprising walls intersecting to form a set of dihedral angles nesting within one another, the lines of intersection of said walls being disposed at angles to the direction of the flow of the stream issuing from said opening.

1,605,351. LOCKING MEANS FOR GAS OR OTHER STOPCOCKS. Andrè Kononski, now, by judicial change of name, Andrew King, Narberth, Pa. Filed Feb. 6, 1922. Serial No. 534,609. 10 Claims. (Cl. 251—166.)



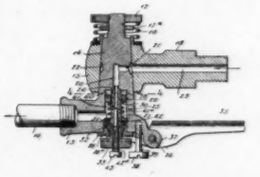
1. The combination of a stopcock and a lock for the same which can be attached thereto without necessitating a special construction of said stopcock, said lock consisting of a collar adapted to slip over the stem of said stopcock and provided with a locking lip coacting with parts of said stopcock to lock said stopcock and means for guiding said collar and preventing it from rotating while said stopcock is being operated.

1,631,953. GAS-OUTLET FIXTURE. Horace C. Anderson, Amarillo, Tex. Filed June 1, 1926. Serial No. 119,978. 9 Claims. (Cl. 137—13.)



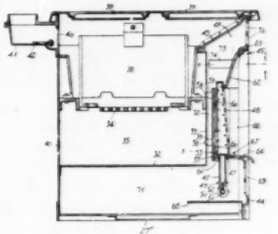
1. An outlet fixture comprising a housing having an open side, a valve embodying a nipple portion mounted in the housing, and operating means for the valve movable into the housing only when the valve is closed.

1,625,964. FLASH IGNITER FOR GAS BURNERS. Otto Spahr, Philadelphia, Pa., assignor, by mesne assignments, to Milwaukee Gas Specialty Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Jan. 23, 1924. Serial No. 687,887. 2 Claims. (Cl. 158—115.)



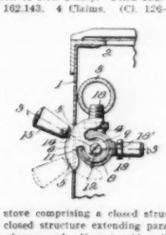
1. A gas lighter comprising a valve casing connected with a source of gas, a valve plug rotatably mounted therein, a supply tube carried by and communicating with said plug, a burner carried by said tube, a valve seat in said plug, a valve stem slidably mounted therein and projecting outwardly beyond the same, a valve at the inner end of said stem co-operating with said seat to control the supply of gas to said burner, said valve stem having a restricted axial passage and communicting apertures for supplying a restricted amount of gas to said burner to maintain a pilot flame thereat, a head on said stem exteriorly of said valve plug, said head having parallel spaced recesses extending across the same in diametric directions, a handle pivoted on said plug and having a forked end projecting beneath said head into the recesses thereof for actuting said valve and for pivotally adjusting said valve plug and its associated elements relatively to said casing, and a stop adjustably mounted upon said valve plug and adapted to be engaged by said head to arrest the opening of said valve at a predetermined point.

1,637,950. COMBINATION RANGE. Henry Lange, Quincy, Ill. Filed June 19, 1925. Serial No. 36,227. 18 Claims. (Cl. 126—39.)



1. A cooking range having a solid fuel heater with a firebox, and a built-in radiant gas heater, said firebox having an inclined portion overhanging said gas heater for deflecting fuel from above into the firebox and for deflecting air from below outwardly

1,637,870. CLOSED GAS STOVE AND VALVE THEREFOR. Frederic G. Nicolaus, Cleveland, Ohio, assignor to American Stove Company, St. Louis, Mo., a Corporation of New Jersey. Filed Jan. 19, 1927. Serial No. 162,143. 4 Claims. (Cl. 126—38.)



1. A gas stove comprising a closed structure, a manifold in the closed structure extending parallel the front wall of the closure and adjacent said wall, a gas valve housing within the closure connected with the said manifold, a burner located within the said closure, the valve housing having communication with the burner, a valve in the said housing, the front wall of the closure having an elongated opening and a handle located outside of the closure and having a portion extending through the said opening, its inner end connected with the said valve, the handle having an intermediate elongated curved portion extending through the said elongated opening, the parts operating for the purpose described.

1,626,047. GAS STOVE. Guilford S. Morley, University City, Mo., assignor to Majestic Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed Dec. 11, 1925. Serial No. 74,694. 2 Claims. (Cl. 158—99.)

1. A gas burner provided with a central air port from which secondary air is discharged, a circular series of gas ports formed around and adjacent to said central air port, means whereby a mixture of gas and primary air is discharged from said gas ports to commingle with the air from said central air port, and a cover having an orifice of a diameter larger than the diameter of said central air port above said air ports and gas ports, a secondary air passage being formed between said cover and the body of the burner to provide for the delivery of additional air to said orifice, and said central air port gas ports and air passage being in communication with each other at points below said cover.

LARGER QUARTERS PLANNED FOR HONOLULU GAS CO.

Honolulu Gas Company has outgrown its present office location on Hotel Street, Honolulu, according to Frank Q. Cannon, manager of the company, and will move to the P. E. R. Strauch Building on King Street in the Bethel and Fort Street block, about the first of the year. This is the company's fourth move since its organization.

The interior of the Strauch Building will be remodeled to suit the company's needs, a large part of the first floor to be devoted to gas appliance display. A 23-year lease on the building was taken by the company.

PUBLISH WORK ON MOTOR FUELS; DR. BROWN, AUTHOR

Bringing up to date the research on motor fuels conducted for the Association of Natural Gasoline Manufacturers by Dr. George Granger Brown, professor of chemical engineering at the University of Michigan, a book on motor fuels written by Dr. Brown is being published by the A. N. G. M. This volume, which will sell for $1.00, will be more complete than Engineering Bulletin No. 7 of the University of Michigan. Orders for the book should be sent to the Association of Natural Gasoline Manufacturers, Cosden Building, Tulsa, Okla.

ARTESIA NATURAL GAS FOR EL PASO IS RUMOR

According to a news report, negotiations are now under way to supply natural gas to El Paso from the Artesia field, the gas to be distributed by the El Paso Gas Company, and the project to involve an investment of approximately $6,000,000, according to estimates.

CHICKASHA LINE BEGUN

Preliminary work is under way on the new line of the Oklahoma Natural Gas Company from the Chickasha gas fields to Oklahoma City. It is to be a 16-inch line, 37 miles in length and will extend to the Canadian River where it will connect with a line previously laid to this point.

OAKLAND COOKING SCHOOL IS LARGELY ATTENDED

A "FREE Gas Cooking School," sponsored by the Oakland Tribune, an evening daily newspaper of Oakland, Calif. was held at the Civic Auditorium of Oakland, October 4th, 5th, 6th and 7th. The daily attendance at the school averaged around 1,500 and approximately fifty manufacturers of food products and home equipment manufacturers participated.

The main feature of the cooking school was the the baking contest which was held on the last day of the sessions. Close to a thousand women presented cakes and pies. Prizes ranged from gas ranges to market baskets, containing a large number of grocery items. The women baked their cakes and pies at home in their own ranges, and of whatever material they chose. After the contest the pies and cakes were turned over to the Salvation Army Maternity Relief Hospital of Oakland to be sold in the interest of a Salvation Army Relief Hospital.

A number of cash prizes were also offered by the Pacific Gas and Electric Company, through its Oakland office, for the best breakfast, luncheon and dinner menus, submitted according to definitely laid down rules. People living in practically all sections of the Eastbay district participated in this event, which was sponsored by the Parent-Teachers' Association of the community.

P. G. AND E. POLICY LAID DOWN IN SPEECH BY R. E. FISHER

BEFORE a meeting of furniture and hardware dealers of San Francisco and Oakland, held a few days ago in the Furniture Exchange building, San Francisco, vice-president R. E. Fisher of the Pacific Gas and Electric Company appeared and outlined exactly for the benefit of those present, the utility's policy in the matter of merchandising and of dealer cooperation.

Furniture and hardware dealers are becoming immediately interested in the policy of the gas company, as a result of the latter's merchandising activity in the smaller towns, and their meeting was, in effect, designed to find out what could be expected as a matter of fixed policy for the future.

Emphasizing the fact that the Pacific Gas and Electric Company is willing at all times to leave the selling of appliances to the dealers in localities where the dealers prove themselves interested in aggressively selling these appliances, Mr. Fisher nevertheless pointed out that where dealer activity was dead or dormant, the company in protecting its own investment would have to, and intended to, proceed with a vigorous sales program. At the present this activity is being confined to small towns, which represent but ten per cent of the gas company's territory.

SO. COUNTIES MEN HEAR VICE-PRESIDENT ON CONVENTION

The high spots of the A.G.A. Convention at Chicago were portrayed to the salesmen and district managers of the Southern Counties Gas Company at their regular monthly dinner and meeting October 20, by vice-president and general manager F. S. Wade. Forty-nine attended the banquet and listened with interest to the important points brought out in the discussions at the annual convention.

STACEY OFFICIAL DIRECTS TUCSON HOLDER ERECTION

Frank Passino, official of the Stacey Bros. Gas Construction Company of Cincinnatti, Ohio, has arrived in Tucson, Arizona, to take charge of the erection of the new gas holder of 500,000 cubic feet capacity for the Tucson Gas and Electric Company. The container will consume 325 tons of fabricated plate material in its construction and when completed will take care of the needs of a city of 75,000 population, according to the construction official. The holder, when completed will be the tallest structure in the city.

HOME SERVICE DIRECTOR AT SANTA MONICA

Miss Katherine Rathbone has been appointed Home Service Director of the Santa Monica Bay Region for the Southern Counties Gas Company, filling the vacancy caused by the promotion of Miss Isabel Allobach, former Director of Home Service for the gas company in Santa Monica, to Managing Director of Home Service for the entire system.

SEATTLE COMPANY EXTENSIONS

The Seattle Lighting Company of Seattle, Washington, has extended its gas mains to the Groveland and Richmont districts in North Seattle.

RUBBER SOLVENT FROM RESIDUE GAS

The Phillips Petroleum Company is installing a plant near Shidler, Oklahoma, for producing a rubber solvent from the residue gas of a nearby natural gasoline plant.

A. G. A. LABORATORY WORKER FOR PACIFIC COAST

Now that so many Pacific Coast gas appliance manufacturers have been awarded Blue Star Approval Seals by the American Gas Association's Testing Laboratory at Cleveland, Ohio, it has been found desirable that the Laboratory be represented on the Coast. R. M. Conner, Director of the Laboratory, announces that Kendall H. Flint has been assigned to this territory. Mr. Flint has been a member of the Laboratory Staff almost since its inception and is thoroughly familiar with its methods and requirements. He will arrive on the Coast early in December.

CHARTER TO UNITED GAS SERVICE COMPANY

Charter has been granted to the United Gas Service Company to supply gas to several towns and cities located along the Empire's natural gas line now under construction from the Amarillo gas fields. Officers of the company are C. E. Burlingame, president and general manager; L A. Rowland, vice-president; and W. L. Watkins, secretary-treasurer.

Towns which the company expects to serve are Miami, Texas, Conway Springs, Kiowa and Harper in Kansas, and Woodward, Waynoka, Alva and other cities in northwestern Oklahoma.

The Empire gas line is expected to be completed by January 1, 1928.

STATE OFFICIALS MAKE UP CAL. CONSERVATION BOARD

Governor Young of California about the middle of October appointed a gas conservation committee to investigate alleged conditions of gas wastage in California oil fields. On the committee named are: Alexander B. Heron, director of the state department of finance; Bert B. Meek, director of the state department of public works; Fred G. Stevenot, director of the state department of natural resources; state attorney general U. S. Webb; and state Railroad Commissioner W. G. Carr.

PARTRIDGE NOW LONG BEACH CITY GAS DEPT. SUPT.

W. H. Partridge, for the past 24 years engaged in gas service activities in Long Beach, Calif., has succeeded W. A. White as superintendent of the City of Long Beach gas department. Mr. Partridge was formerly assistant superintendent.

SOUTHWESTERN BUYS NEWTON PROCESS CO., IS REPORT

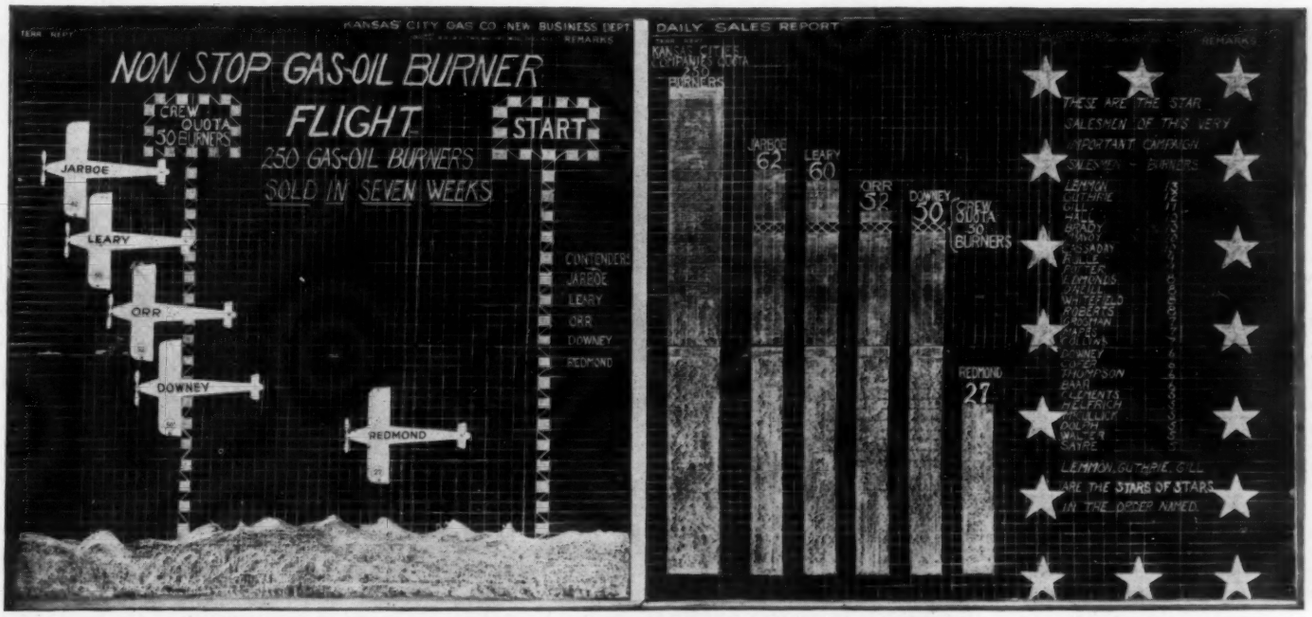
A report current late in October has it that the Southwestern Engineering Corporation, Los Angeles, has purchased the Newton Process Company, Fullerton, Calif., manufacturer of natural gasoline plant equipment.

JOHN REDD WITH L. A. G. AND E.

John Redd, formerly with the Williams Radiator Company of Los Angeles, has been engaged by the Los Angeles Gas and Electric Corporation as contact man for the company with dealers in gas appliances in its territory.

PROVING UP GAS FOR SHELBY

Shelby Oil & Gas Company of Shelby, Montana, has started its No. 2 gas well about two miles north of Shelby, near its recently completed gasser which has a flow rated at between 10,000,000 and 12,000,0000 cubic feet daily, and is planning to pipe its gas to Shelby.



Blackboard sales chart used to stimulate Kansas City salesmen in Doherty Gas-Oil Burner Campaign

Gas-Oil Burner Sold *to* Even Heating Peaks

AS COLD weather sets in, the "winter peaks" bugbear again faces gas companies, and in some sections thought has been given to ways and means for mitigating this evil. Recently there was announced one device designed to aid in the solution of this troublesome "peak" problem—the Doherty Gas-Oil Burner—which was experimented with on the Doherty system, and this year is actively being sold on the lines of the Kansas City Gas Company.

The simple idea behind the Doherty Gas-Oil Burner is this: Through a demand meter set to pass only a given amount of gas, the customer heats his home to a given temperature on gas—then for the peaks, switches to oil, and the gas company escapes the grief attendant upon peak load, spreading out its service over a wider field of patrons than would otherwise be possible.

Experiments have convinced the Kansas City Gas Company that this combination burner will build a highly satisfactory class of house heating load; that it will limit the hourly maximum demand to 70 per cent of what it would be were the consumer burning gas exclusively, while cutting total consumption only about 10 per cent; for, says the company, the consumer burns gas about 90 per cent of the time.

In an intensive seven-weeks campaign this interesting burner was introduced to Kansas City homes—250 installations being the quota set up for A. W. Baker, new business manager of the company, to shoot at.

This campaign is an outstanding accomplishment in that it was conducted under many handicaps. When the quotas were assigned to the two companies, the Doherty Gas-Oil Burner was an appliance that was new to the salesmen and involved individual educational work so that the men could talk the merits of the burner intelligently to the customer. No advertising was used as a sales aid and the major portion of the burners was sold in the hottest part of the season with the temperature hovering around 92° most of the time.

All obstacles were met: the 250 burners are sold and in use at the start of the heating season on the company's reservation rate.

No sales activity has ever been conducted by the Kansas Cities Gas Companies that aroused so much interest as this recent Doherty Gas-Oil Burner campaign. A novel idea of a non-stop gas-oil burner flight was used on the blackboard in the sales room to show daily progress of each crew and to create interest among the men. Each crew was given an aeroplane bearing the name of the supervisor in charge, and the plane was advanced on its flight in accordance with the number of jobs sold daily. Fifty gas-oil burners was the crew goal. Daily bulletins were posted commenting on each plane as to position, progress, or trouble it might be having.

Scales similar to thermometers were used to show the comparative standing of each crew daily and a large thermometer was used to show the companies' quotas.

One section of the board was used to show the Star Salesmen of the campaign: the requirement to be among the star salesman was to sell five or more burners.

Through these graphic devices the interest of the sales crews was held at high pitch, and individual salesmen were stimulated to produce their best, in friendly competition.

The Kansas Cities Gas Companies review this campaign with a great deal of pride. They sold the set quota, in the face of odds, and the major portion of the 250 Doherty Gas-Oil Burners has been installed and is ready for use. The balance is being installed as quickly as possible.

And to prove that the special campaign did not slow up regular sales the company points to the following additional gas using equipment sold during the seven-week period of the gas-oil burner drive:

Gas-Oil Burners	250
Gas Fired Furnaces	7
Conversions	91
No. 4 Jobs	58*
Ranges	810
Radiantfires	600
Water Heaters—Storage	66
Water Heaters—Tank	6
Laundry Equipment	35

*No. 4 installations are in homes without central heating plant and consist of one or more Heatrolas, Triple Effect or Radiantfires.

Once on the system, the burners operate on the reservation rate approved for house heating in Kansas City, Missouri, and Kansas City, Kansas, by the Missouri and Kansas Public Utility Commissions. This rate is as follows:

Rate schedule:
A Commodity Charge
Per 1,000 cubic feet of gas metered per month $0.45
Plus—
A Reservation Charge—
Per cubic feet of maximum hourly requirement per year $0.40
(To be paid in 12 equal monthly installments.)
Plus—
A Customer's Charge—
Per meter per year $12.00
(To be paid in 12 equal monthly installments.)

Reservations:

The requirement of the customer shall be determined by the customer, after which Empire Demand meters or equivalent devices shall be installed by the Company in order to limit the flow to the reservation made by the customer.

The minimum requirement shall be 22½ cubic feet per hour.

All customers shall enter into a contract for gas on the above rate for the period of one year. No reduction in the reservation stipulated in contract shall be made within the life of the contract.

Discount—None.

Above net rate applies only in case bill is paid within ten days after the expiration of the period for which service is rendered. If not paid, the gross rate, which is the above rate plus 10 per cent, then applies.

Special Rule:

The following maximum hourly requirements shall be considered as standard:

	Cubic Feet Per Hour					
22½	45	90	135	180	270	360
30	60	105	150	210	300	390
37½	75	120	165	240	330	420

New Business *and* Rate Structures

tween Capacity, Output and Consumer Costs upon the method as outlined under Item 4—namely, the capacity Basis—and the details are set forth by Table I. From a tri-part cost allocation of this character, any type of rate structure—including singly or in combination, block rates, two or three part rates and Wright Demand rates—can be developed.

The operating payroll of a company has to be met each month, and is, in general, independent of the volume of gas sent out. Therefore, Production, Distribution, Transmission Payroll Expenditures are classified under Capacity Costs. It is admitted that some of these expenses do vary directly as the Output varies, but in general, and for the major part, the Payroll is constant or fixed as to amount.

Oil or Coal or Gas—Materials or Supplies—used in the production of the distributed commodity, vary directly as the output or sendout, and therefore these costs are assigned under Output Cost in total.

Under the Primary Accounts of Distribution Expenses, Removing and Resetting of Meters and Regulators, Inspection of Consumers' Premises, etc., vary directly as the number of consumers, and as a consequence are charges against Consumer Costs.

The Commercial Expense is primarily a Consumer Expense and therefore is so classified in the analysis.

New Business Expense can be split between Capacity, Consumer and Output Costs on an arbitrary basis as thought best, such as one-third to each, or can be allocated between Capacity and Consumer Costs on a fifty-fifty basis.

General and Miscellaneous Expenses can be prorated between Capacity, Consumer and Output Costs on the basis of the percentage relationship of the previously assigned expenses, or all of these expenses can be allocated to Capacity.

If the latter allocation is followed, the company is protected against periods of depression that are beyond its control. A number of small companies may be located in communities that are dependent upon the output or sale of one kind of commodity. Any fluctuations in the selling price or production of this one commodity affect the community to a great extent, and hence result in a curtailment of gas sales that is beyond the control of the company.

In the following allocation of operating expenses between Capacity, Consumer and Output Costs, it will be noted that under the item of "Remarks" certain expenditures for Transmission, Distribution and New Business have been prorated arbitrarily between Capacity, Consumer and Output Costs. The Transmission expense allocation could just as well have been assessed against the Capacity Cost. The Distribution expenditures could have been directly assessed against Capacity, Consumer or Output Costs, without giving any consideration to the direct departmental expenditures.

In the Summary of Minimum Operating Revenue Requirement to Meet Bond Interest and Full Depreciation Annuity—Table II—it should be noted that the item of Bond Interest—the Minimum Return—is used in lieu of a Fair Rate of Return, such as 8, 9 or 10 per cent as the case may be.

The Theoretically Correct Monthly Charge per Meter and the Average Rate

(*Continued from Page 35*)

per M. C. F. Sold—Table III—is developed from the results shown for Table II under Unit Statistics. The graph shown—Graph No. 1—is the result of plotting this theoretically correct monthly average rate per M. C. F. Sold in conjunction with the Present Rate Schedule. For purposes of illustration, there is shown a Proposed Rate Schedule. It should be noted that the steps of this Proposed Schedule coincide more closely with the theoretically correct average rate than the present rate schedule. In this hypothetical study, it has been assumed that the company will give consideration to a reduction in rates, and hence is in position to develop a rate structure closer to the theoretical rate structure than is reflected by existing rates.

Revenue to be received under a Proposed Schedule may be developed by the application of the new rates to a block analysis of one or two months' sales rectified to the annual sales, or a 12 months' block analysis.

In general, a study of this graph develops the fact that the larger consumers are paying the way of the smaller consumers, and therefore, theoretically, a greater reduction can be given to these consumers. However, a matter of policy sometimes dictates differently, as a reduction to the greater number of consumers is more appealing to the general public. This is a matter of Management policy.

In the development of new rates for the acquisition of business, it can be readily seen that at times it may be desirable for a company to waive part or all of the depreciation charge. This is particularly true of a new company during the period of development. Likewise certain of the General Expenses and possibly some of the Interest or Return may be waived for certain classes of business in order to increase the load factor of the system. Again, Hours of Use and Diversity of Use may be of such character that each unit of gas sales should not bear the average proportion of General and Miscellaneous Expense, Bond Interest or Return and Depreciation Charge or Allowance.

MARKET ANALYSIS

Having determined upon a method of cost allocation, and having arrived at a theoretically correct rate curve, and unit costs, the next steps are:

1. Determination of rate form. As previously stated local conditions will play a large part in this.
2. A general determination of the ability of the local public to pay for more gas and more appliances.
3. Market analysis.
   A market analysis should be segregated into at least three parts; i.e.,
   a—Domestic
   b—Commercial
   c—Industrial

Methods of industrial market analysis have been treated fully by this and other associations. Time will not permit further discussion here. The problem is one largely of obtaining data concerning individual plants, the logical presentation of which plays a leading part, usually, in the determination of such a potential load.

The same is true in some lesser degree of a commercial analysis. Therefore nothing further will be said concerning that at this time.

However, the domestic market presents a more difficult problem. Facts and figures, however logically presented, play a smaller part. Alone they seldom cause a housewife to purchase appliances which will be additional gas load. Ability to purchase, and competition for a place on the family budget play their part. Need alone, without the creation of a sufficient desire to do without something else will not suffice. The problem of analysis becomes one of determination of load expectancies and saturation.

A domestic market analysis divides itself readily into three sections, as follows:

First, a determination of unserved domestic territory. With most companies there is logically a minimum of unserved territory. In any case, a surprising amount of territory can be quite effectively covered by one man in a few days time. Unserved houses beyond reach of existing lines may be readily spotted on a map. A subsequent check-up in the office will serve to show up possible extensions, which may be canvassed at will.

Second, a determination of the number of houses in the territory which are in position to receive gas, but which are not gas customers, and a knowledge of what fuels they use.

Third, a determination of the connected gas load in each house on the lines.

The main difficulty is presented in determining the second and third items. Naturally, the first and most obvious method is to actually canvass a complete territory. Where at all possible, this is highly desirable. However, confining ourselves to minimum requirements for reasonably inexpensive, yet serviceable methods, a cross section survey is suggested.

Cross section domestic surveys are frequently employed and there are numerous methods of conducting them, depending in a large measure upon the extent to which detailed information may be desired. Logically again, within reasonable limits, the more detailed the survey, the more serviceable it ultimately becomes. Confining ourselves, however, to minimum adequate requirements, the following is suggested:

The man or men who are to obtain the data should be supplied with suitable cards, which may be imprinted with the desired information to facilitate checking in the field. Usually customer addresses should be addressographed on the cards, while field cards may be made up for non-customers as encountered. The minimum of information should be:

1—Fuel used for cooking
   (a) Auxiliary — e.g. — gas hot plate auxiliary to a wood range.
2—Fuel for water heating
3—Fuel for central heating
   (a) Auxiliary
4—Refrigeration.

It is desirable and quite simple to obtain further information at the same time concerning the equipment employed in each case, with a notation as to condition. This information then becomes quite effective for sales work later.

Once the scope of the work has been laid out, it is essential that careful consideration be given to the portion of the territory to be included in the survey. A representative cross section can be obtained only by including in the survey poor, moderate and better class homes approximately on a weighted

average basis. For example, if a study of the territory leads to the conclusion that the community is composed of 30% poor, 50% moderate and 20% better class, then that percentage of each should comprise the survey as nearly as possible.

Such a survey may include from 10 per cent of the total for larger communities to 50 per cent for the very small ones. Compilation of the data should serve to show:

1. General
   (a) Gas customers as % of total on lines
   (b) Non-gas customers as above
      1—Above segregated as to main sources of competition
2. Analysis of load
   (a) Cooking
      1—All gas as % of total and % gas customers
      2—Auxiliary gas as in No. 1 above
      3—All other than gas segregated by fuels
   (b) Water Heating
      1—Gas as % of total and % gas customers
      2—Other water heaters as above
      3—Makeshift methods
   (c) Heating
      1—Gas central
      2—Other than gas central (segregated)

TABLE I

ALLOCATION OF OPERATING EXPENSES BETWEEN CAPACITY, CONSUMER AND OUTPUT COSTS

	Tri-part Cost Analysis				
	Year	Capacity	Consumer	Output	Remarks
	(1)	(2)	(3)	(4)	(5)
Production Expense					
Superintendence	$ 2,533.48	$ 2,533.48	.....	.....	
Labor	18,262.47	18,262.47	.....	.....	
Fuel for Steam	2,069.26	.....	.....	2,069.26	
Fuel for Oil	65,688.04	.....	.....	65,688.04	
Miscellaneous Supplies & Expense	4,407.56	.....	.....	4,407.56	
By-Products Labor	598.51	598.51	.....	.....	
Maintenance	3,401.49	3,401.49	.....	.....	
Total Production Expense	96,960.81	24,795.95	.....	72,164.86	
Transmission Expense					
Superintendence	836.10	836.10	.....	.....	(Allocated on basis
Operation Compressor Stations	2,099.20	1,599.20	.....	500.00	of 25% Output
Operation Transmission Lines	242.33	242.33	.....	.....	Cost and 75% Ca-
Miscellaneous Transmission Expense	13.92	13.92	.....	.....	pacity Cost)
Maintenance	2,000.00	2,000.00	.....	.....	
Total Transmission Expense	5,191.55	4,691.55	.....	500.00	
Distribution Expense					
Superintendence	1,239.19	1,239.19	.....	.....	
Station Labor	439.20	.....	.....	439.20	
Supplies and Expense	200.00	70.00	$ 126.00	4.00	(Allocated on basis
Removing & Resetting Meters & Reg.	6,000.00	.....	6,000.00	.....	of Department
Meter Department Salaries & Expense	3,233.92	.....	3,233.92	.....	Direct Expenses)
Inspection Consumers Premises	4,000.00	.....	4,000.00	.....	(Allocated on basis
Miscellaneous Labor & Expense	1,000.00	350.00	630.00	20.00	of Department
Maintenance	6,000.00	6,000.00	.....	.....	Direct Expenses)
Total Distribution Expense	22,112.31	7,659.19	13,989.92	463.20	
Commercial Department Expense					
General Labor	5,185.81	.....	5,185.81	.....	
Books and Contracts	2,864.82	.....	2,864.82	.....	
Meter Reading & Collecting	4,753.61	.....	4,753.61	.....	
Commercial Rents	2,255.00	.....	2,255.00	.....	
Commercial Supplies & Expense	4,502.69	.....	4,502.69	.....	
Total Commercial Expense	19,561.93	.....	19,561.93	.....	
New Business Expense					
Management Salaries	273.75	273.75	.....	.....	(Allocated on basis
Advertising	1,500.00	750.00	.....	750.00	of 50% Capacity
Demonstrating, Canvassing & Solict	500.00	.....	500.00	.....	Cost and 50%
Miscellaneous	100.00	100.00	.....	.....	Output Cost)
Total New Business Expense	2,373.75	1,123.75	500.00	750.00	
General and Miscellaneous Expense					
Pay & Expense of General Officers	6,272.61	6,272.61	.....	.....	
Pay & Expense of General Office Emp.	4,000.00	4,000.00	.....	.....	
General Office Supplies	2,500.00	850.00	525.00	1,125.00	(Allocated on basis
Other General Office Expense	2,000.00	680.00	420.00	900.00	of Direct Expense)
Legal Expense	2,000.00	2,000.00	.....	.....	
Insurance	3,612.24	3,612.24	.....	.....	
Regulatory Commission Expense	2,000.00	680.00	420.00	900.00	(Allocated on basis
Injuries and Damages	2,000.00	680.00	420.00	900.00	of Direct Expense)
Other Miscellaneous Expense	2,000.00	680.00	420.00	900.00	
Maintenance	1,000.00	1,000.00	.....	.....	
Total General Expense	27,384.85	20,454.85	2,205.00	4,725.00	
Total Operating Expense	$173,585.20	$58,725.29	$36,256.85	$78,603.06	

TABLE II

SUMMARY OF MINIMUM OPERATING REVENUE REQUIREMENT TO MEET BOND INTEREST AND FULL DEPRECIATION ANNUITY, SEGREGATED AS TO CAPACITY, CONSUMER AND OUTPUT COSTS

Classification	Year	Tri-Part Cost Analysis: Capacity Cost	Consumer Cost	Output Cost
	(1)	(2)	(3)	(4)
Production Expense	$ 96,960.81	$ 24,795.95	.....	$ 72,164.86
Transmission Expense	5,191.55	4,691.55	.....	500.00
Distribution Expense	22,112.31	7,659.19	13,989.92	463.20
Commercial Department Expense	19,561.93	.....	19,561.93	.....
New Business Expense	2,373.75	1,123.75	500.00	750.00
General and Miscellaneous Expense	27,384.85	20,454.85	2,205.00	4,725.00
Depreciation	17,927.06	17,927.06	.....	.....
Uncollectible Bills	1,659.88	663.95	315.38	680.55
Taxes—				
State	18,773.21	7,509.28	3,566.91	7,697.02
Franchise	2,226.83	890.73	423.10	913.00
City and County	750.00	750.00	.....	.....
Bond Interest	35,387.26	14,154.90	6,723.58	14,508.78
Total Minimum Requirement	$250,309.44	$100,621.21	$47,285.82	$102,402.41
Unit Statistics				
Three-Part Rate—				
Monthly Minimum Requirement—				
Requirement per Consumer		1.7225	0.8095	.....
Requirement per 100 Cu. Ft. Meter Capacity		1.2678	0.5958	.....
Requirement per M. C. F. Sold		.....	.....	0.7251
Requirement per 100 C. F. Sold		.....	.....	0.0725
Average Number of Consumers				4,868
Connected Meter Capacity in 100 Cu. Ft.				6,613.97
1926 Gas Sales in M. C. F.				141,230.7

3—Gas auxiliary (show principle source)
4—Other auxiliary (show principle source)

The above information may be set up as percentages or with a reasonable degree of accuracy, total figures representative of the territory may be ascertained as follows:

Determine the ratio of total gas meters in the territory to the number of gas meters encountered on the survey, and multiply all figures by that ratio. It is thus possible to determine unsecured load expectancies.

At this point, and not before, it is possible to give consideration to proper rates, for only with such information is it feasible to estimate at what points a reduction of rate will accomplish the desired results and how much time may be consumed in the accomplishment.

TABLE III

THEORETICALLY CORRECT MONTHLY CHARGE PER METER AND AVERAGE RATE PER M. C. F. SOLD

Monthly Consumption in Cu. Ft.	Capacity and Consumer Charge	Output or Commodity Charge	Total Monthly Charge	Average Rate Per M.C.F.
	(1)	(2)	(3)	(4)
100	$2.5320	$ 0.0725	$ 2.6045	$26.0450
200	2.5320	0.1450	2.6770	13.3850
300	2.5320	0.2175	2.7495	9.1650
400	2.5320	0.2900	2.8220	7.0550
500	2.5320	0.3625	2.8945	5.7890
600	2.5320	0.4350	2.9670	4.9450
700	2.5320	0.5075	3.0395	4.3421
800	2.5320	0.5800	3.1120	3.8900
900	2.5320	0.6525	3.1845	3.5383
1,000	2.5320	0.7250	3.2570	3.2570
1,500	2.5320	1.0875	3.6195	2.4130
2,000	2.5320	1.4500	3.9820	1.9910
2,500	2.5320	1.8125	4.3445	1.7378
3,000	2.5320	2.1750	4.7070	1.5690
4,000	2.5320	2.9000	5.4320	1.3580
5,000	2.5320	3.6250	6.1570	1.2314
6,000	2.5320	4.3500	6.8820	1.1470
7,000	2.5320	5.0750	7.6070	1.0867
8,000	2.5320	5.8000	8.3320	1.0415
9,000	2.5320	6.5250	9.0570	1.0063
10,000	2.5320	7.2500	9.7820	0.9782
15,000	2.5320	10.8750	13.4070	0.8938
20,000	2.5320	14.5000	17.0320	0.8516
25,000	2.5320	18.1250	20.6570	0.8263
50,000	2.5320	36.2500	58.7820	0.7756
60,000	2.5320	43.5000	46.0320	0.7672
70,000	2.5320	50.7500	53.2820	0.7612
80,000	2.5320	58.0000	60.5320	0.7567
90,000	2.5320	65.2500	67.7820	0.7531
100,000	2.5320	72.5000	75.0320	0.7503

CONCLUSION

In conclusion it may be well to consider what service this association might be in position to render to further studies along these lines. Of the two rate limitations, Cost of Service, and Ability to Pay, the former is doubtless easier of determination by cost allocation. The latter is more difficult because it necessitates the compilation of considerable data, most of which must be obtained locally in the territory under consideration. Obviously, however, as more of such data are made available for reference the job becomes less tedious and results are sure to prove more sound.

A few samples of the manner in which the A. G. A. is compiling industrial data for this purpose are given in Table IV. Of particular value are the last three items, "Efficiency with gas divided by efficiency with competitive fuel", "Price at which gas must be sold to get business on basis of fuel cost alone", and "Estimated price at which gas must be sold taking all factors into consideration."

This particular work is being confined to industrial applications of gas, but the same necessity in kind, and in many cases the same in degree exists with domestic and other classes of gas service. Mr. L. C. Haffner of Portland in a paper presented during 1926 furnished similar data compiled for his territory relating to some commercial usages of gas. It seems evident that more commercial and domestic work of this character might well be undertaken for the benefit of the association member companies. The work might well be tied in with that of the A. G. A. in some phases, but it must be remembered that to be of local benefit, it must be locally derived.

TABLE IV
SAMPLES OF INDUSTRIAL DATA COMPILED BY AMERICAN GAS ASSOCIATION

Operation	Competitive Fuel	Cost of Fuel at Furnace	Description of Apparatus using Competitive Fuel	Description of Apparatus using Gas	Cost of Gas at Work	Efficiency with gas divided by Efficiency with Competitive Fuel	Price at which gas must be sold to get business on basis of Fuel cost alone	Est. Price at which gas must be sold taking all factors into consideration
					Per M			
Baking	Anthracite Coal	$14.17 per ton	8′x10′ direct-fired Middleby Ovens	Indirect-fired Johnson Oven	.91	3	$ .52 per M	$ .91 per M
Baking	Anthracite Coal	10.00 per ton	Rotary type baking Oven	Conveyor type Oven	.96	1.8	.34 per M	1.00 per M
Bottle Washing	Bituminous Coal	7.00 per ton	Meyer-Dumore Jr. bottle soaker, steam operated from 8 HP vertical boiler	Same operated from gas-fired steam boiler	1.06	2.5	.335 per M	1.00 per M
Roasting	Pea Coal	9.94 per ton	Cylindrical roasters	Same	.98	.....	.45 per M	.90 per M
Roasting	Pea Coal	8.00 per ton	Cylindrical roasters	Same	1.00	2.2	.355 per M	1.25 per M
Rivet Heating	Oil	.08 per gal	Uninsulated furnace	Same with insulation	.68	2.8	.68 per M	.71 per M
Singeing Cotton fabrics	Oil	6.38 per gal	Under-fired copper plates	Same	1.10	.....	1.055 per M	1.50 per M
Barrel Construction	Coke	14.00 per ton	Stove	Same with gas burner installed	1.05	3-½	1.03 per M	1.75 per M
Litharge Manufacture	Oil	.07 per gal	Direct-fired oven type furnace	Same adapted for use of gas	.52	2.8	.75 per M	.....

GAS EXHIBITS TO BE SHOWN IN ARCHITECTS BUILDING

Gas heating displays will form an important part in the Building Material Exhibit in the new Architects Building which is now nearing completion at Fifth and Figueroa Streets, Los Angeles.

This new edifice is a twelve-story, Class A Building, costing approximately $650,000. The Building Material Exhibit will occupy the first floor, the mezzanine and the lower floor. The main floor of the exhibit will be a miniature city, with exhibits in the form of small houses.

A permanent architectural exhibit, drawings, photographs of the best Southern California architecture, photostats, books and periodicals of interest to architects will be at hand in the foyer of the building.

NEW LIQUID PURIFICATION APPARATUS IN OAKLAND

A new $100,000 installation of emulsifier equipment is being added to the liquid purification apparatus of the P. G. and E. Oakland plant. Mechanical emulsifiers of the impeller type, which have just recently been perfected are being installed to replace the old air bag system in the sludge tanks. There will be nine of the new emulsifiers operating in as many separate tanks, each driven by a 20 H. P. motor through reduction gears. New tanks have been constructed for this purpose, and the old ones will be utilized as sludge tanks.

Similar equipment is also being installed, on a smaller scale, at Sacramento and San Rafael, at a cost of $55,000 and $9,000 respectively.

FINISH NATCHEZ LINE

The gas transmission line being laid by the Central Power and Light Company to supplant the temporary line bringing natural gas into Natchez, Miss., will be completed by November 15th.

STERRETT NOW PRESIDENT OF DES MOINES COMPANY

H. R. STERRETT, formerly vice-president and manager of the Des Moines Gas Company, Des Moines, Iowa, has been elected president of the company, succeeding C. M. Benedict, resigned. Mr. Sterrett's election came at the October 4 meeting of the directors.

H. R. Sterrett

Mr. Benedict, who had been an official of the Des Moines company for a period of five years, was granted a leave of absence last April to take up work with the United Gas Improvement Company as Assistant to P. H. Gadsden, vice-president in charge of public relations, and his permanent location in Philadelphia was followed by his recent resignation as chief executive of the Iowa utility.

Mr. Sterrett has been with the Des Moines Gas Company for the past eleven years and has successively filled the positions of engineer, manager and vice-president.

Des Moines members of the company's board of directors are B. F. Kauffman, J. G. Gamble, Alex Fitzhugh, J. M. Burrows, Wm. Koch and H. R. Sterrett.

MARIETTA FRANCHISE VOTED

Voters of the city of Marietta, Oklahoma, in an October election granted a franchise to the Community Natural Gas Company to supply gas to that city. The work of laying mains in the city was to be begun about the 1st of November.

LOS ANGELES ORDINANCE HAS PROVISION ON FITTERS

A new plumbing ordinance passed in Los Angeles the latter part of October affected gas companies in that it provided that gas fitters must qualify as sanitary plumbers. However, a resolution passed concurrently, held the objectionable clause in abeyance for a thirty-day period, at the petition of the three gas companies involved—the Los Angeles Gas and Electric Corporation, Southern California Gas Company and Southern Counties Gas Company. The ordinance became effective on November 1.

INDUSTRIAL FUEL SUPPLY TO HAVE SEAL BEACH PLANT

The erection of a $150,000 compressor plant has begun by the Industrial Fuel Supply Company at Seal Beach, Calif. at a point north of the Coast Highway, between the coast road and the Newport line of the Pacific Electric Railway. Fluor Construction Company of Los Angeles will handle the job, and according to the terms of the agreement is to have the plant completed in forty-two days from signing of the contract.

The plant will house five two-hundred H.P. units, and will be equipped with the new type Fluor Cooling Tower with automatic adjustable wind deflection.

NEW SALESMANAGER FOR WEDGEWOOD

Ed. J. Hinchey has just been appointed sales manager of the James Graham Mfg. Co., with headquarters at the main office in San Francisco. Hinchey has been in some way connected with the stove business all of his life. Just prior to joining the Wedgewood organization, he was in business for himself with the Coast Commercial Company, jobbers and manufacturers, representatives of Portland, Oregon, and the Pacific Northwest.

With *the* Metermen

The Edwards Gravity Balance

By ARTHUR G. LINDELL
*Industrial Fuel Supply Company**

AS most of you know an orifice gas meter does not measure gas, but merely pressures. Although these pressures are used in calculating the quantity of gas passed through the orifice, there are other essential factors in the volumetric measurement of flowing gas, one of the most important of which is the accurate determination of the specific gravity of the gas.

Specific weight, or specific gravity may be defined as the ratio of the weight of unit volume of a substance to the weight of unit volume of some standard substance. In the measurement of natural gas the standard substance is air.

Some of the common types of specific gravity apparatus in use today for field measurement are:

1. The Edwards gravity balance.
2. The Baxter gravity apparatus.
3. The Pierce gravity balance.
4. The Schillings specific gravity apparatus.

In addition to these there are various gravitometers.

The apparatus most commonly used in this section for determining accurate specific gravities is the Edwards Gravity Balance, and this paper deals mainly with that type. The underlying principles of the Edwards gravity balance are stated in Technologic Paper No. 89, Bureau of Standards, as follows:

"According to Boyle's law the density of a gas is proportional to its pressure; and the buoyant force exerted upon a body suspended in a gas is proportional to the density of the gas and therefore to its pressure. Therefore, if the buoyant force exerted upon a body is made the same when suspended successively in two gases, then the density of the two gases must be the same at these pressures; or the densities of the two gases at normal pressure are in inverse ratio to the pressure when of equal buoyant force."

CONSTRUCTION OF BALANCE

The construction of the Edwards gravity apparatus is very simple. It consists of a gas tight cylindrical metal case about eight inches long which is water jacketed. Inside the cylindrical case is a balance beam which has on one end a light sealed bulb or globe made of brass or some similar metal, and on the other an adjustable counterweight, and a tip with a hairline parallel to another fixed hairline across the front end of the case. At right angles to the balance beam and near the center of gravity is a small cross arm in which are inserted two needle points forming a fulcrum. These points rest in a small glass trough, the glass being of a hard quality to resist pitting. The front glass of the case is removable allowing easy access to the chamber. A mercury manometer is attached to the gas tight case to measure the pressure in the chamber. Two needle valves on top of the case, one at each end, allow an inlet and an outlet connection with the chamber. The entire case is supported on three points or legs, two of which serve as leveling screws.

In determining the specific gravity of a gas the chamber is thoroughly purged with air which is first passed through a tube filled with calcium chloride to remove any moisture. Then the needle valves are closed and manipulated so as to bring the balance beam to a balance, which is observed through the front glass of the case when the hairline on the tip of the balance beam and the fixed hairline coincide. An observation of the manometer reading is then noted which indicates the pressure of air. The same procedure is followed with the gas to be tested and the manometer reading again noted. The absolute pressures for air and gas are then obtained by combining the observed manometer readings with the barometer pressure and their relation to each other used to calculate the specific gravity of the gas.

The formula as given by the Technological Paper, No. 89, of the Bureau of Standards is as follows:

d_a=Air density at some standard pressure, p_s.
d_g=Gas density at same pressure, p_s.
p_a=Absolute pressure at which the beam balances in air.
p_g=Absolute pressure at which the beam balances in gas.

The buoyant effect of air displaced by the globe $= K\ d_a \frac{p_a}{p_g}$

The buoyant effect of gas displaced by the globe $= K\ d_g \frac{p_g}{p_s}$

where K is a constant depending upon the difference in external volume of the balance globe and its counter weight. Since the buoyant force is the same in the two cases:

$$K\ d_g \frac{p_g}{p_s} = K\ d_a \frac{p_a}{p_s}$$

$$\frac{d_g}{d_a} = \frac{p_a}{p_g}$$

or specific gravity of gas $= \frac{p_a}{p_g}$

The combinations of manometer readings used by various companies in this locality are as follows:

1. Both air and gas positive or pressure.
2. Air negative or partial vacuum and gas positive.
3. Both air and gas negative.

In each case the resultant specific gravity is the same. For the average gas a negative air and a positive gas reading is an ideal method as it gives the greatest specific gravity range without readjustment of the balance setting and at the same time does not show extremely low or high readings on the manometer.

The Edwards gravity balance is very sensitive and consequently is not practical for transporting in the field. It is in reality a laboratory instrument and the common practice is to bring samples of gas from the field to the laboratory in metal containers. The apparatus requires very little attention after being properly adjusted. Being mechanical it should be inspected occasionally to secure the most accurate results. The most common sources of troubles are: worn needle points, pitted glass trough, and leaky connections. Another source of trouble which fortunately seldom occurs is a leaky bulb. If the leak is very slight it may not be detected for some time. These conditions are easily remedied, and a careful operator will keep his apparatus in an efficient working condition, thus making the mechanical and personal error practically negligible.

*Given at the Southern California Meter Association's October 27th meeting at Long Beach, Calif.

Important Sessions *of* Meter Group, Oct. 27

MEMBERS of the Southern California Meter Association, meeting October 27th at the Breakers Hotel, Long Beach, in their regular monthly session, put the influence of that organization behind the movement for a uniform pressure base for gas measurement.

By a motion passed by the members present the Meter Association went on record as being in favor of the adoption of a standard of pressure for use in connection with the generally accepted standard of temperature used in measuring gas. This is in line with a resolution of similar import, passed by the Pacific Coast Gas Association at its Santa Cruz convention in September.

This motion and its adoption came as the climax of an evening of thought-provoking discussion, built around the reading of two papers. A. G. Lindell, of the Industrial Fuel Supply Company, gave a paper on "The Edwards Gravity Balance" and its relation to standard measurement of gas, which is published on this page. A paper by F. A. Hough on "Barometric Pressure Corrections in Orifice Meter Work," was the second feature. Lengthy discussion followed the presentation of each paper.

Following the dinner served at the Breakers Hotel, B. M. Laulhere of the Midway Gas Company, and vice-president of the meter men's organization, opened the meeting, in the absence of T. K. M. Smith, president, by introducing and turning the gavel over to W. N. Flesher of the Standard Gasoline Company, who acted as chairman of the session.

Hi Jinks Is Next Meter Association Feature

ANNOUNCEMENT of the first social event to be staged by the recently formed Southern California Meter Association—a Hi Jinks at the Oak Tavern in Los Angeles on November 25th—was made at the last regular meeting of the organization, by G. R. Hoffman, a member of the program and entertainment committee.

Invitational announcements will be sent out about the 5th of November, and it was urged that they be answered by the members before the 20th of the month, so that the exact number of those planning to attend might be obtained. Members are assured that "high class" entertainment will mark

this as a long-to-be-remembered occasion, and the expense for extra features will be included in the cover charge of $2.

The program and entertainment committee is composed of W. N. Flesher of the Standard Gasoline Company, chairman; G. R. Hoffman, of the Barnsdall Oil Company, C. W. Brockman, of the Union Oil Company and T. G. McAllister of the California Gasoline Company.

Plan *for* December 29th Program

A paper on the "Specific Gravities of Wet Gases" will probably be one of the features of the Southern California Meter Association's December 29th meeting at the Breakers Hotel in Long Beach. The organization's committee on measurement, of which M. J. Cereghino of the Los Angeles Gas and Electric Corporation is chairman, will arrange for the paper's preparation.

With the December meeting the association will resume its monthly banquet and business sessions, which are temporarily giving way to the November Hi Jinks.

P. G. AND E. SAFETY TEAM GETS HONORS AT PAC. COAST MEET

HONORS were won for the gas utility industry at the Fourth Annual Pacific Coast Safety Conference, held October 24 to 28 in the Biltmore Hotel, Los Angeles, when the San Rafael gas department first-aid team of the Pacific Gas and Electric Company walked off from the 25-team field in the safety contest which featured the conference.

Sponsoring the safety sessions were the Southern California Society of Safety Engineers, Society of Safety Engineers of California, National Safety Council, United States Bureau of Mines, and California Industrial Accident Commission.

The P. G. and E. men are the first utility representatives to take first honors away from the large field of petroleum company and industrial entrants in the safety contest. Composing the utility team—which, incidentally, was the same team which came off first in the Pacific Coast Gas Association safety meet—are the following: A. E. Englebright (captain), W. A. Kohlhoff, N. S. Hamilton, James Ward, E. Tourtelotte, Guy Tunnyhill, W. A. Bahr (team manager), and S. C. Dickinson (P. G. and E. safety engineer).

Second place in the contest went to Shell Oil Company of California's Wilmington team; third, to Richfield Oil Company's Los Angeles team; and fourth, to Standard Oil's Richmond entry.

To the P. G. and E. men went the E. D. Bullard Perpetual Trophy, the individual championship trophies given by the two safety engineer's organizations in California, a silver medal from the National Safety Council, a bronze medal from the American Red Cross, and a $120 purse.

McKAY ELECTED TO POST WITH SECRETARIES' ORGANIZATION

E. F. McKay of Oklahoma City, manager of the Oklahoma Utilities Association, was elected secretary of the national Association of Utility Secretaries at a meeting held October 13th in Chicago. Mr. McKay was elected to the unexpired term of Horace Davis of Lincoln, Nebraska, who resigned. Oklahoma City was chosen as the meeting place for the annual conference of that association, to be held December 5, 6 and 7.

SURVEY OF LOUISIANA GAS FIELD MADE

The annual field survey of the Louisiana Department of Conservation shows the Monroe gas field to have 484 producing wells, which are owned by 49 operators, making this the leading gas district in the world, considering acreage covered.

Southern Carbon Company is the biggest producer at Monroe, with 108 wells; Union Carbon Company, second, with 56 wells; Natural Gas Producing Company, third, with 51; Ladell Properties, Inc., fourth with 46; Palmer Corporation, fifth with 26; J. M. Huber, sixth, with 20; and the Ouachita Natural Gas Company, seventh, with 19 producing wells.

LARGEST AIR MAIL POSTAL SENT BY GAS COMPANY

A post card measuring 44 by 28 inches, the largest post card ever to travel by air mail was recently sent to Wm. F. Raber and the "Byllesby Men and Women of the San Diego Consolidated Gas and Electric Company," by the Mountain States Power Company, a Byllesby organization at Tacoma, Washington.

The card was mailed with the first air mail to leave Tacoma, and for a day before it was sent was on exhibition in one of the principal stores in the northern city, where it created a great deal of interest.

In addition to bearing greetings from the Tacoma Company it announced the fact that that city had been placed on the air mail map. Forty Lindbergh air mail stamps were used in mailing the card.

FOUR BRANCH GAS LINES ADD TO HOUSTON SYSTEM

Decision was made by Houston Pipe Line officials late in September for construction of four branch gas lines, which, when completed will increase the daily capacity of the company's system in Southwest Texas from about 85,000,000 to 130,000,000 cubic feet daily and will increase the line mileage from 500 to around 650 miles.

A 36-mile extension from Freeport to Wadsworth is to connect the old line to Houston with the compressor station at Edna. Also a line is authorized from Refugio to White Point gas field, 28 miles, and the Laredo-Lucas field line will be doubled. The high pressure 18-inch line running eastward from Lucas field was completed late in September.

COAL STRIKES IN COLORADO; A VISITATION?

I. W. W. strike activities waxed strong in the Colorado coal fields during the latter part of October. Mines in Routt county in the northwestern part of the state were affected for the first time, and additional mines in the southern part of the state, Las Animas county, closed. Twenty-three out of 38 mines in Huerfano county, in the south, were shut down.

Colorado gas men could hardly be censured if they claimed this strike activity as a visitation upon the coal men for anti-natural gas propoganda they have been sponsiring.

ARIZONA COMPANIES CHANGE OWNERSHIP

Recent action of the Corporation Commission of the State of Arizona gave the Central Arizona Light and Power Company of Phoenix authority to purchase the complete facilities of the Southside Gas and Electric Company of Chandler, Gilbert and vicinity. The new owners will take over the properties at the end of December.

Convention Echoes Heard *in* Los Angeles

By D. L. SCOTT

Manager Public Relations Department, Los Angeles Gas and Electric Corp.

FIVE HUNDRED people assembled in the auditorium of Los Angeles Gas and Electric Corporation Friday evening, October 7, to get a sip of convention gravy, which was brought back to Los Angeles by the representatives of the three local gas companies who had had the good fortune to take part in the big doings at Santa Cruz.

The audience was made up of representatives from Southern California Gas Company, Southern Counties Gas Company and Los Angeles Gas and Electric Corporation.

Addison B. Day, executive vice-president and general manager of the host company, swang the gavel. Fred J. Schafer, general manager of Southern California Gas Company, delivered a talk on "A General View of the Convention," and Arthur F. Bridge, Executive Engineer of Southern Counties Gas Company told "What I Got Out of the Convention." Both of these talks were much enjoyed by the stay-at-homes.

G. Stanley Wade, Norman Hoff and Miss Pearl C. Lentz, delivered their three-minute addresses, which elicited so much favorable attention at Santa Cruz. The First Aid Team which represented Los Angeles Gas and Electric Corporation at Santa Cruz put on a demonstration similar to the famous "broken back" problem which was so much enjoyed at the P.C.G.A. contest.

"A Friend for the Company," 'Gene Ramsay's prize stunt, with the Convention all-star cast—Mrs. Kerlin and W. M. Fisher—was given in a one-night stand for the benefit of the audience.

The meeting was a complete success, not only as an evening of pleasant entertainment, but also as an introduction of the "younger set" to the Pacific Coast Gas Association and as a promoter of fellowship among the men of the three local utilities.

We hope to repeat the event next year.

RIO GRANDE VALLEY LINES ALMOST COMPLETE

Completion is expected in the near future of the entire gas line system of the Rio Grande Valley Gas Company to serve more than 20 towns in the lower valley region with gas from the Mirando territory, including gas fields in Webb, Jim Hogg, Duval, and Zapata counties, from the Southern Gas Company of San Antonio.

This system of lines represents a 137-mile 12-inch main from the central gathering system near the fields to San Benito, and a 22-mile, eight-inch line from San Benito to Brownsville, aside from the short branch lines serving the individual cities.

Practically all of the distributing systems were completed during September. The bringing of natural gas to the Rio Grande Valley is estimated to be the greatest step in this well known region's progress. Delivery will be both for domestic and industrial consumption.

N. R. McKEE MAKING EXTENDED VISIT IN EAST

N. R. McKee, purchasing agent of the Southern Counties Gas Company, Los Angeles, Calif., is spending several weeks in the east following his attendance at the A.G.A. sessions in Chicago. He is visiting gas companies and manufacturers of gas appliances and equipment, returning to Los Angeles late in November.

Gas *in the* Potato Flake Business

(Continued from Page 31)

No cost figures have been kept on the operation of this machine, but the operator estimated the cost per pound of flakes produced at slightly less than a cent.

In the production of potato flakes, the proceedure is similar whether the cooker be the display machine just described or the large size commercial production units. The potatoes must first be graded and the culls and small ones eliminated. They are next scrubbed, then peeled. Peeling is generally done by a machine similar to that shown on the extreme right in Figure 1, which machine rubs the skin off. This peeling is done under water or in a spray so that the skin and dirt are carried away and the peeled potatoes washed clean. Slicing is next. While in the machine just described the flakes drop directly into the oil, it is the usual practice in large quantity production to slice them into water and keep them submerged until time for cooking. This will prevent the flakes from drying out or spoiling. Just before cooking, they are removed from the water and drained. In cooking the flakes, some manufacturers put them in wire baskets which just fit inside the cooking pot, handling these baskets by an overhead trolley system. After cooking, the flakes are drained, either centrifugally or by gravity. One small local manufacturer uses a washing machine with whirling basket for this work and has had excellent results. When thoroughly drained, the flakes are packed in glassine paper sacks, then in cardboard cartons and finally in full, half or quarter gross cartons ready for delivery to the wholesaler or jobber.

GAS FUEL FAVORED

Gas fuel is used entirely or in part by every Denver potato flake manufacturer. Figure 2 is a photograph of a typical gas-fired cooker in use by one of the larger companies. This cooker was designed according to data compiled by Public Service Company of Colorado engineers, and consists of an inner pot and an outer insulated shell. The pot itself is 36 inches wide and 64 inches long. The depth of the pot is 28 inches. A vertical partition divides the pot into two sections, each approximately 32 inches by 36 inches. The top of this partition is about two inches lower than the top of the pot so that when one side rises as a cold charge is put in, the oil will overflow to the other section rather than boil over the edge of the pot to the floor. Holes through the bottom of the partition also serve the same purpose. The outer dimensions of the cooker shell are about four feet by six and one-half feet and the overall height of the cooker, excluding legs, is about forty inches. The outer shell has about two and one-half inches of asbestos board insulation on the bottom and half way up from the bottom on the sides and ends, where a baffle plate extends across from shell to pot. This baffle is designed to keep the hot gases from rising above the normal oil level of 13 inches, a precaution which must be observed to prevent burning the foam which rises when raw chips are put into the pot. The upper portion between pot and shell is vented to the atmosphere by a series of small holes drilled in the shell, as shown in Figure 2. The flue connection is at the far end.

COOKING THE FLAKES

The cooking temperature is about 370°. Higher temperatures burn the flakes on the edges, while lower temperatures do not fully cook the flakes and they become oil soaked. The cooking time must not be much more than three minutes or the flakes will be tough and leathery. To satisfy these requirements, a gas rate of 380,000 B.t.u. per hour is used. This is sufficient to bring the oil from a cold start to 370° in 45 minutes. When a load of raw flakes is put in the pot, the temperature is reduced to 250°, but the rate of heat input is sufficient to recover this loss in about two minutes.

The burner equipment is of the familiar low-pressure air type. A centrifugal fan blower with direct connected motor furnishes the required quantity of air to a proportional mixer with a zero pressure regulator in the gas line. The mixture passes to the manifold and is fed to two pipe burners running the long way of the cooker. Each burner pipe has about fifty ports. The port spacing is less than one and three-eighths inches to insure flame travel from one tip to the next. Each port has a raised tip with thirteen small drilled holes, producing a short even flame rather than the long cone which results from a single large hole. The original luminous type pilots have been changed to Bunsen type.

SAVINGS OVER COAL

The plant where this cooker is now in service once fired a number of its pots with coal and kept a careful record of the operating costs per pot. When the industrial fuel representatives from the Public Service Company of Colorado approached them about firing with gas, they demanded that equally complete figures for gas operating cost be estimated and that these figures be guaranteed. The result of this compilation is interesting. The potato flake company allowed an estimated saving on each pot to be converted of $4.17 per month, due to elimination of ash handling. A saving per pot per month on kindling of $10.83 and a labor decrease of $18.20 was granted. After several months' operation of two converted pots, the actual costs were checked against the estimated ones and it was found that they agreed almost exactly, except that the labor saving was nearly fifty per cent more than had been allowed. While the cost of coal per pound of flakes produced was less than the equivalent gas cost, 0.42 cents per pound with coal against 0.49 cents per pound with gas, the difference was more than offset by an increase in production per converted pot of thirty per cent.

CHICAGO UTILITY BUYS TWO RADIO STATIONS

The Peoples Gas Light and Coke Company of Chicago has purchased and is operating two radio stations through the Great Lakes Broadcasting Company. A program on home service is presented daily.

HODGE HEADS ADVERTISING AND SALES DEPARTMENT

W. H. Hodge, a vice-president of the Byllesby Engineering and Management Corporation has been placed in charge of a new Sales and Advertising Department which recently has been created by that organization. Mr. Hodge was formerly manager of the advertising and publicity department for a period of seventeen years. In addition to developing new business this department will also supervise advertising and publicity activities.

ELK CITY OIL AND GAS SELLS TO UNION GAS CORP.

Interests of the Elk City Oil and Gas Company in Elk City, Kansas, have been sold to the Union Gas Corporation of Independence, Kansas. The new owners took charge on October 1st.

GAS TO PAPER MILL AT HODGE, LA.

Progress is reported well under way on the seven-inch, 43-mile gas line from Monroe gas field to Hodge, Jackson Parish, La. The line, on completion, will deliver approximately 5,000,000 cubic feet of gas daily and will supply primarily a large paper mill at the town of Hodge. Surveys for the line were completed early in September by the Industrial Gas & Development Company, the builder and owner of the line.

CALIF. COMMISSION REQUIRES SPECIAL SERVICE DATA

A general order has been issued by the California Railroad Commission requiring utilities operating pipe line, gas, electric, telephone, telegraph, water, heat, wharf or warehouse utilities in the state of California to file in a prescribed manner with the Commission all contracts for special service or services, or placing in effect deviations of any sort from the filed rates, fares, tolls, rentals, charges, classifications, contracts, practices, rules, or regulations of such utilities, together with an application to the commission to enter into such contracts.

AMERICAN NATURAL GAS IS BUYER OF OKLAHOMA NATURAL

A NEW company, the American Natural Gas Corporation, has been organized, with R. C. Sharp as president, and has taken over virtually all of the capital stock of the Oklahoma Natural Gas Corporation, which recently passed into the control of the Phillips Petroleum Company of Bartlesville, Okla. Mr. Sharp was also president of the Oklahoma Natural Gas Corporation.

Plans were previously announced by Phillips Petroleum to construct a large natural gas line connecting its properties in Texas with the Oklahoma Natural system, as an outlet for the Phillips gas production. Some time before the American Natural Gas Corporation's organization it was announced that the Phillips line would not be laid immediately, as at first planned. It is understood that the American Natural contemplates carrying the line and other expansion projects for Oklahoma Natural to completion. No changes in personnel of the Oklahoma Natural are involved in the new line up.

Phillips Petroleum acquires preferential right to supply the new company's gas system, by arrangement with the new owners.

American Natural Gas Corporation's holdings extend into Texas and Kansas as well as Oklahoma, and would probably aggregate in excess of $40,000,000. G. L. Ohrstrom & Company, Inc., are handling financing involved in the new company's organization.

MUSKOGEE INDUSTRIES WILL GET GAS SOON

Industrial plants of Muskogee are due to get natural gas early in November with the present progress on the four-inch line leading into the northern limits of the city from shallow gas fields several miles to the north of the city. The D. L. T. Oil & Gas Company had road crossings effected along the route before the close of September. Gas will be transported by this line for industrial utilization only, according to plans of the distributing company.

NEW ORLEANS PUBLIC SERVICE IN NEW OFFICE BUILDING

THE new eight-story office building erected by the New Orleans Public Service, Inc., exclusively for its own use, was ready for occupancy on October 24th and is considered one of the finest and best equipped structures in the South.

The building, which stands at Baronne and Union Streets, New Orleans, has been especially constructed so as to meet departmental needs. The entire first floor has been given up to those departments which are in closest touch with the public. Upper floors are devoted to other departments, with the company's executive offices located on the eighth floor.

On the eighth floor there are also provided class rooms, a spacious women's rest room and restaurant with a complete kitchen for the serving of lunches and a special medical suite containing an X-ray room, laboratory, offices, examination rooms, treatment rooms, and rest rooms, all with tile floors and tile wainscots.

Elaborate show windows have been provided the building, equipped with reflectors at the top and bottom, with strip lights, border lights, spot lights, and disappearing foot lights. All the outlets are wired for three different colors.

The exterior of the building is finished in buff Indiana lime stone on the street fronts, with light buff colored pressed brick being used for the courts and party walls. While the present structure is eight stories, the foundations were laid to carry twelve stories, and additions may be made as the need for them develops.

SOUTHERN CALIF. COMPANIES IN CO-OPERATIVE MOVE

Co-operating with the State Railroad Commission, and for the primary purpose of coordinating efforts of the companies serving natural gas in Southern California, the Southern California Gas Company, Midway Gas Company, Los Angeles Gas and Electric Corporation and Southern Counties Gas Company have effected a co-operative arrangement for smoothing out operating problems during the coming winter peak months. R. M. Bauer of the Midway Gas Company is actively in charge of the new work, with the title of Inter-Company Gas Supervisor, and he will work with Claude C. Brown, gas engineer of the Railroad Commission. Mr. Brown was recently appointed gas supervisor for Southern California by the Commission.

Mr. Bauer's work as office engineer at Midway headquarters is now being handled by B. M. Laulhere, formerly superintendent of transmission and measurement for the Southern Division of the Midway Gas Company.

METTLER RETURNS FROM TRIP AROUND WORLD

Lee B. Mettler of the Lee B. Mettler Company, Los Angeles manufacturer of gas burners, has recently returned from a ten months pleasure and business trip around the world. Points visited by Mr. and Mrs. Mettler included the Hawaiian Islands, Japan, China, the Philippine Islands, The Island of Ceylon, India, Egypt, Palestine, Italy, Switzerland, Austria Hungary, Czecho Slovakia, Sweden, Germany, Holland, Belgium, France, Wales, England, Scotland and Ireland.

During his trip sales outlets were established in seven foreign countries for Mettler lines, sales in these countries being exclusively through the gas companies. Mrs. Mettler accompanied him on the trip.

California Natural Gasoline Association *to* Have Important Meeting *in* Los Angeles, Nov. 15-16

NATURAL gasoline men on the West Coast are looking forward with keen anticipation to the November 15th and 16th Fall meeting being held by the California Natural Gasoline Association. The program, arrangements for which are in the hands of G. H. Unkefer, while still somewhat tentative is sufficiently comprehensive to give the meeting all the aspects of an annual convention—the *piece de resistence* being the address of Dr. George Granger Brown of the University of Michigan.

Dr. Brown, who heads the Ann Arbor department of chemical engineering, is making the trip to California to give Western men the benefit of the significant research he has been conducting on motor fuels for the Association of Natural Gasoline Manufacturers, which has headquarters at Tulsa, Okla.

In addition to the two-day business program there will be a banquet and entertainment, extending a Western welcome to the Mid-Continent men who are expected to sit in on the addresses and discussions. The banquet will come on the evening of the 16th, at the Biltmore Hotel, and will wind up the natural gasoline meetings.

Following is the tentative line-up of the business program:

Morning Session—Tuesday, November 15

8:00-9:30 a.m.—Registration.
9:30 a.m.—Address of welcome.
9:45 a.m.—President's address.
10:00 a.m.—Paper — "Proposed Tentative Standard Pressure Charcoal Test for Gasoline Content of Natural Gas."
Paper to be prepared by the "Gas Testing Committee" of the Association and to be a summary of their recommendations. To be presented by P. S. Magruder, General Petroleum Corporation of California, Sub-Chairman of Committee.
Discussion.
11:00 a.m.—Paper—"Classification of the Various Grades of Natural Gasoline Produced in California."
Paper to be prepared by the "Specifications Committee" of the Association and presented by R. W. Garman, Union Oil Company, Chairman of Committee.
Discussion.
11:30 a.m.—Paper — "Recommendation for Standardization of Barometric Pressure in Natural Gas Measurement."
Paper to be prepared in conjunction with the "Metering Committee" of the Association and presented by Ben Laulhere, Midway Gas Company.
12:00 M.-1:30 p.m.—Recess for luncheon.

Afternoon Session

1:30 p.m.—Paper—"The Determination of the Vapor Tension of Volatile Liquids—Comparison of Method Proposed by C. P. Beistle of the Bureau of Explosives with Present Bureau of Explosives Standard Test for Gasolines."
Presented by C. D. Gard, Union Oil Company.
Discussion.
2:30 p.m.—Paper — "Analytical Gas and Gasoline Fractionation."
Presented by L. O. Warner—Barton, Manning & Warner.
Discussion.
3:15 p.m.—Paper—"Safety & Fire Prevention in Gasoline Plants."
Presented by H. N. Blakeslee, Field Secretary National Safety Council.
Discussion.
4:00 p.m.—Paper—"Production of Natural Gasoline by Conservation of Vapors."
Presented by W. G. Palmer of J. A. Campbell Co.
Discussion.
5:00 p.m.—Adjournment.

Morning Session, Wednesday, November 16

9:30 a.m.—Address—"Importance of Natural Gasoline as a Constituent of Motor Fuel."
Presented by Dr. G. G. Brown, Professor of Chemistry, University of Michigan. Director of Research for the "Association of Natural Gasoline Manufacturers."
Through the courtesy of the Association of Natural Gasoline Manufacturers, Dr. Brown will present data accumulated in connection with the last two years' Research Program sponsored by that Association.
12:00 Noon—Adjournment for Luncheon.

Afternoon Session

1:30 p.m.—Continuation of Dr. Brown's address.
Discussion.
4:30 p.m.—Adjournment.

Evening Session

7:00 p.m.—Banquet and entertainment for members and visitors. A few short addresses will be made—Speakers and Toastmaster to be announced later.

EMPIRE SUPERINTENDENT HOLDS MEETING AND BANQUET

Ross M. Stuntz, superintendent of gas production for the Empire Companies, Bartlesville, Okla., held a meeting and dinner on October with his superintendents and scouts, in which H. L. Montgomery, manager of Cities Service Gas Company, and B. R. Bay, superintendent of the Cities Service natural gas division, participated. "New Business and its Relation to Rate Structures" was one of the topics for discussion, which was lead by A. L. Griffith. Other subjects discussed were, "Government Ownership of Public Utilities," led by E. R. Albert; "The Executive and the Industrial Load," led by Cecil C. Harberson; and Customer Ownership," led by R. J. Daugherty.

CHUBB PRESIDENT OF IOWA-NEBRASKA LIGHT & POWER

C. N. Chubb has been named president of the Iowa-Nebraska Light & Power Company, recently formed through the consolidation of the Lincoln Public Service Company, the Nebraska Gas & Electric Company, Iowa Service Company and Maryville Electric Light & Power Company.

Mr. Chubb is well known in American Gas Association circles, having served as chairman of the A.G.A. Technical Section at one time.

START TRACY PLANT

Tracy Gas Company's plant at Tracy, Calif., is now under construction and mains are being laid. Service is expected to begin by January first. Leon Melekov, Los Angeles organizer of the Tracy utility, is understood to be contemplating service to Niles, Livermore, and adjacent communities as well as Tracy.

RELIANCE IN NEW PLANT

The Reliance Manufacturing Company is now occupying its new plant, recently built at 1000 Meridian St., Alhambra, California. It was erected at a cost of $100,000.

Winning *the* Water Heater Load

(*Continued from Page 33*)

netted 23; the second week 30; the third week 32; and the fourth week 34; a consistent healthy increase. At this time we had little but conjecture upon which to base our future stock requirements. It was extremely difficult to chart sales with no previous water heater experience, but our purchasing department showed faith in our "dream of 1,000" and by the end of April we had a carload arriving weekly.

"ON TO SANTA CRUZ" CONTEST

At this point the idea of a lively sales contest was formulated. It was named, "The Santa Cruz Water Heater Race" because the salesmen selling the greatest number of heaters during a 13-week campaign, May 13th to August 13th, was to receive a free trip to the annual Pacific Coast Gas Association Convention. Second prize was a two-day trip to Catalina Island for the salesman and wife. Third man was to receive $10.00 in gold. The basis for point determination was as follows: The sale of a 15-gallon model gave a salesman 2 points; 20-gallon heaters 5 points; 30 gallon heaters 7 points; and 45 gallon heaters 10 points. The point values were arranged in this manner to encourage the men to sell the larger units rather than the lesser ones. They were urged to oversell a consumer rather than undersell, because the housewife might complain if the heater capacity did not meet her requirements, but she would be a perpetual booster provided the appliance gave her an abundance of water.

To stimulate the sixteen men during the contest, weekly and monthly bonus points were awarded to the three highest men. Top man for the week received 7 extra points, next best salesman won 4 points and third salesman 2 points. High man for the month carried away 10 extra points, second man received 7, and third salesman for the month, 4. These weekly and monthly bonus points worked wonders throughout the contest and it was surprising to see how various salesmen sold their way into these bonus prize positions.

"The Santa Cruz Water Heater Race" exceeded our fondest sales expectations by a tremendous margin. The first week of the contest developed 55 sales, as follows: seventeen 15-gallon heaters, twenty-six 20-gallon, nine 30-gallon and three 45-gallon models. Week by week the sixteen salesmen fought for first, second and third places, running up weekly average sales of more than 43. The last week exceeded all previous reports with 62 contracts signed.

The thirteen-week campaign resulted in the sale of 562 automatic storage gas water heaters with a retail monetary value of $51,018. Considering the fact that our entire 1926 water heater sales totalled but 181, it is apparent that the special efforts put forth during this brief period produced splendid returns.

REPLACEMENTS IMPORTANT

Figures showing certain old, inadequate equipment replaced by modern heaters, revealed significant side-lights on how this campaign aided the company in its movement to build up its gas load on existing lines.

Nineteen electric water heaters were taken out and replaced by *gas* water heaters.

Ninety-six heaters were installed to replace equipment in which water was heated by means of wood, coal, oil, solar heaters, or other types of appliances, many of which were more or less unsatisfactory to the consumers.

One hundred and three (side-arm) tank heaters were replaced.

Thirty-nine worn-out, inadequate automatic storage units were removed and replaced by revenue-producing automatic storage gas water heaters.

Twenty-eight unsatisfactory instantaneous heaters of varied makes were removed.

Finally, 277 automatic storage gas water heaters of every conceivable type and style were taken out and destroyed and in their places, approved, modern heaters were set.

In a word, 562 so-called water heating appliances, using gas, wood, coal, electricity, oil, solar heat, or "what have you" were taken from our lines all the way to the river bottom and destroyed, never again to be a source of complaint to the consumer. In their places were installed the latest type of modern, automatic storage gas water heating equipment. In many instances, the former were not operating, were trouble-breeders to the consumers as well as to the gas company. On the contrary, the 562 heaters are today in operation, rendering as many pleased customers on our lines, the very best type of hot water service, building invaluable good will for us and improving our public relations.

Too much credit cannot be given to the 16 salesmen who made this selling activity possible. They talked, breathed, and sold water heaters for 13 weeks and made many friends for their company as they carried the story of modern gas hot water service to their prospects.

THE WINNERS

First prize in the "Santa Cruz Water Heater Race" went to Sidney W. Allender of Orange County. Mr. Allender jumped into the lead during the first week of the contest and was never passed, although several of the rival salesmen threatened him on some occasions. Mr. Allender won the Santa Cruz trip because he specialized on the larger units, many of his sales being 30 and 45-gallon installations.

Second place went to William Peacock of Santa Monica, who won several of the weekly bonuses and who frequently threatened Mr. Allender's lead. Charles H. Smith of Ventura captured third prize, heading several of the weekly sales and giving the first and second men some uneasy moments.

What about water heater sales since the close of the contest?

Our organization continues at a very satisfactory pace, averaging 20 per week. Following the successful introduction of our new appliance to the public by offering a 20 per cent trade-in allowance for the old heater, on September 15th we reduced that figure to 10 per cent. This latter figure corresponds to our standard policy on ranges, space heaters and other gas burning equipment.

However, the campaign taught our salesmen that they can sell water heaters and today these appliances are considered an essential part of our selling program, whereas last year the sale of a water heater was quite an event. Frequently when one is sold, the representative sells a gas range to the same consumer or vice versa. One sale creates another and our men, in calling back to ask a consumer how her new water heater is operating, find a willing prospect for other types of appliances.

RANGE SALES GAIN TOO

At the outset a fear was expressed that a so-called campaign on heaters would greatly curtail gas range sales. Such, however, was not the case. During the contest the salesman double-shotted many orders and accordingly our range sales for the year, to October 15th, are 57.5 per cent ahead of the same period of 1926.

At the present moment our sales organization is intensively engaged in its fall heating appliance campaign and in spite of warm weather during much of the campaign period to date, is exceeding last year's sales.

Our experience points to but one way to capture that "will-o'-the-wisp" of all good gas men, i.e. increased consumption upon existing lines. That way is by winning and holding friends through the intensive sale of approved, economically operated gas appliances for *every* purpose.

As for the future, now that we have at least partially learned how to win the desired water heating load, we feel that our duty will not be discharged until all of our consumers enjoy modern hot water service from gas.

SEVENTH ANNUAL METER SHORT COURSE, AMES, IOWA

At Iowa State College, Ames, Iowa, there will be held the Seventh Annual Meter Short Course, from December 6 to 9, inclusive. Officials of the engineering extension department of the college are in charge of the course.

Gas metermen from the five States included in the Mid-West Gas Association—Iowa, Nebraska, Minnesota, North and South Dakota—will attend and learn at first hand from expert instructors the most approved methods of meter repair.

This year there will be talks and discussions on gas distribution and production problems, in addition to the meter repair instruction. Distribution work will begin on the first day and extend through the course, and production topics will come in for treatment on the second and third days of the course.

HOTEL RESTAURANT DRIVE TO START FOR P. G. AND E.

A special crew of men is being assembled by the gas sales department of the Pacific Gas and Electric Company, for the purpose of a strong sales effort to be made on all of the hotels and restaurants in the company's entire territory. The plan is designed to accomplish the replacement of coal or oil burning equipment with modern gas apparatus.

An attractive proposition consisting of a three-year lease payment contract has been worked out, and this will be featured by the salesmen. All equipment sold will be purchased by the P. G. and E. from the local equipment houses, and the paper on the transactions as far as the retail sales are concerned, will be carried by the utility. It has been estimated that $2,000,000 annual revenue can be added to the gas sales if the campaign is successful.

FOSHAY BUYS IN KANSAS

The Union Power Company of Goodland, Kansas, has been purchashed by the W. B. Foshay Company of Minneapolis, Minn. The company will continue under the management of H. N. Slater.

BUREAU FIGURES GIVEN ON GAS CONSUMPTION

Bureau of Mines reports recently in circulation show that while natural gas is produced in 22 of the 48 states that only four of these states produce gas in excess of their own consumption needs.

Ohio, for example, is given as producing about 43,235,000,000 feet annually and consuming about 111,969,000,000 feet. West Virginia, the report shows, is the chief exporter, serving New York, Pennsylvania, Kentucky, Ohio and Indiana.

KANSAS UTILITY GETS COMMISSION SANCTION

The Union Public Service Corporation was given authority by the Kansas public service commission on October 11th to begin business as a public utility. This company is a consolidation of several gas distributing companies in Eastern Kansas which have heretofore been owned by the H. L. Doherty interests, and will distribute natural gas to the cities of Colony, Welda, Baldwin, Edgerton, Gardner, Merriam, Shawnee, Lenexa, Paola, Osawatomie, Rantoul, Ottawa, Parsons, Richmond, Princeton, Cherryvale, Weir and Wellsville.

EXTEND SERVICE TO GOODRICH TIRE PLANT IN LOS ANGELES

Main extensions have been begun by Los Angeles Gas and Electric Corporation to supply the new plant of the Goodrich Tire and Rubber Company, now being built in the industrial section on the east side of Los Angeles.

The Goodrich plant, which is one of the great new industries recently brought to the community, will occupy a tract of forty-five acres. It will cost several millions of dollars and will give employment to many hands.

Consumption of the big tire plant is expected to amount to approximately 1,000,000 cubic feet per day.

DEMONSTRATOR HAS FULL SCHOOL PROGRAM

Numerous cooking school engagements have been filled by Miss Willa Campbell, director of the Home Economics Department of the Tappan Stove Company, during the past month.

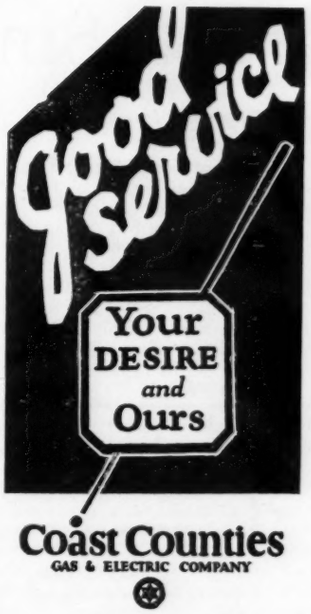
The week of October 3rd the school was conducted in Visalia, under the auspices of the Central Counties Gas Co. October 10, the Hanford Gas and Power Co. sponsored the lecture. October 18th to 21st the Turlock Gas Co., co-operating with the local Women's Club and the Union High School, sponsored the meeting, as reported elsewhere in this issue.

FRANCHISE LET TO MOORE ON SEYMOUR LINE

C. O. Moore et al have been granted franchises for the laying of a gas line from Chillicothe, connecting there with the Upham Gas Company line, to Seymour, northwest Texas town. The builders have guaranteed to begin work within two months following receipt of the franchise and also to have gas running into Seymour by January 15, 1928.

A. P. I. URGED TO BEGIN CORROSION PROGRAM

A preliminary committee on corrosion, appointed by E. W. Clark, president of the American Petroleum Institute last February, has recommended that the Institute undertake a broad program of co-operative work on corrosion problems, and that a general and regional committees be appointed.



Never *a* "Complaint" *from* This Company's Patrons

BELIEVE it or not, but the Coast Counties Gas and Electric Company, San Francisco, Calif., never receives a complaint from a customer! The customer may think he is complaining, and there is no reason to believe that the Coast Counties is entirely free from an occasional rift in its public relations sky. But what the patron is actually doing, at the time when he fancies he is registering a "kick," or maybe telling the gas company where to "head in at," is making a "request for improvement of service."

All employees are instructed to refer to any requests in that way, the idea back of it being, of course, that a certain psychological fundamental is involved. "Complaint" has the stigma of the negative attached to it, —it implies something that has been left undone. "Improvement" is bright with the promise of better conditions, while it attaches no stigma to those that existed before.

So that the customer may know that his request is being executed, he is sent a duplicate copy of the "Order for Improvement of Service." This even goes so far as to to indicate when the work is to be done. Upon completion of the job a postcard goes out inquiring if everything has been done to the consumer's satisfaction.

The complete working of the system is explained from time to time in envelope stuffers that accompany all monthly statements of this company.

SOUTHERN CALIFORNIA GAS MERGER AUTHORIZED

Merger of Southern California Gas Company, Midway Gas Company, River Bend Gas and Water Company, Hanford Gas and Power Company, and Central Counties Gas Company, together with the necessary financial issues attendant upon this amalgamation, have been authorized by the California Railroad Commission.

The reorganized plan of capitalization stands as follows: $8,646,000 in first mortgage and refunding 5% gold bonds, due 1957; underlying bonds, $14,554,000; preferred stock, 6% cumulative of $25.00 par value, $4,556,850; and common stock $8,000,000, consisting of 320,000 shares at $25.00 par value.

SECOND BITUMINOUS COAL CONFERENCE

A second International Conference on Bituminous Coal will be held in Pittsburgh during the week of November 19th, 1928. The first conference held at the Carnegie Institute in November, 1926, was attended by 1700 persons and aroused interest throughout the world.

Dr. Thomas S. Baker, president of the Carnegie Institute of Technology, who called the first conference, visited Europe this past summer for the purpose of discussing phases of the second conference with eminent scientists in France and Germany. He plans to pay another visit to Europe in 1928 to invite speakers and delegates.

GAS USE ON INCREASE IN PETROLEUM REFINERIES

The results of a canvass to determine the trend of fuel consumption at petroleum refineries in this country, made by the United States Bureau of Mines, Department of Commerce, showed a decrease in the use of oil for fuel in 1926 of approximately 4,000,000 barrels as compared with 1925. The canvass developed also that there was a small decrease in the use of coal, a material increase in the use of gas, both natural gas and refinery gas, and a considerable increase in the use of petroleum coke.

GALE SUCCEEDS MUEHLBERG

Charles W. Gale, individual gas sales engineer with the Public Service Company of Colorado, has been appointed to succeed Clarence E. Muehlberg in charge of the Denver industrial division of that utility. Mr. Muehlberg has received an appointment with the Consolidated Gas Company of New York, as assistant manager of the industrial department.

GAS CO. MEN PAN MUNICIPAL OWNERSHIP IN 3-MINUTE GO

A three-minute speaking contest on the "Municipal Ownership of Public Utilities" is to be conducted under the auspices of the Educational Committee of the Los Angeles Gas and Electric Corporation's Employee Association on Tuesday evening, November 15th.

WANTS TOPPENISH FRANCHISE

A franchise to install a gas system in the city of Toppenish, Washington, has been applied for by Dr. H. P. Bloxham of Sunnyside, Washington. A company is now being formed to pipe natural gas from the wells in the Rattlesnake Hills east of Sunnyside to all towns in the valley, according to news report.

EXTENSION FROM ABILENE TO SWEETWATER

Construction work was due to start early in October on the Lone Star Gas Company's 10-inch welded line from Abilene, Texas, to Sweetwater. The line will serve intermediate points, such as Merkel, Trent, etc. Plans are for a later extension of the line to Colorado City.

RATES DROP ON LINES OF OKLAHOMA G. & E.

A reduction in the domestic gas rate of 5 cents for each 1,000 cu. ft. of gas went into effect at Oklahoma City, Okla., Oct. 9th. The same reduction will apply also to Guthrie, El Reno, Britton, Bethany, Norman and Yukon, nearby towns. This reduction makes the present rate 60 cents. The Oklahoma Gas & Electric Company supplies these towns with gas.

Cooking School *in a* Small Community

their numbers filling in the intervals during seating, and when demonstrations or other features were not in progress. On each day the president of the Women's Club made a talk, and the domestic science instructor of the high sshool also spoke on one occasion.

Sessions of the school were held in the high school auditorium, and the photograph above shows a typical meeting—with 384 women and 216 high school girls between the ages of 14 and 18 years present, a total of 600. For the four days the attendance was approximately 1750, which would represent a high proportion of Turlock's 1050 homes.

Miss Willa Campbell of the Tappan Stove Company delivered the entertaining lectures which made up the "meat" of the course in good cooking. On two mornings domestic science classes of the high school met in the auditorium with Miss Campbell as their instructor.

Recipes used were tasty, and in line with good dietetics, and a number of them came from the cook book of the Turlock Women's Club. This book was offered for sale at the cooking sessions, which added interest to the use of the recipes. Space does not permit printing more than a sample of the appetizing dishes prepared, but here is one that drew favorable attention from every omelet-lover:

PUFFY OMELET

3 eggs separated
¾ teaspoon salt
3 tablespoons water
2 or 3 tablespoons butter
¼ teaspoon baking powder

Beat yolks until thick and lemon colored. Add salt and water, beating until fluffy. Add stiffly beaten egg whites cutting and folding them into the first mixture. Heat the frying pan and butter the sides and bottom. Turn in the mixture and spread evenly. Place over a low fire letting it cook through slowly. When puffed and delicate brown underneath, place the pan in the broiling or baking oven with the blaze turned very low. When the top is firm to the touch (in about 2 minutes), make a crease at right angles to the handle and fold omelet away from you rather than toward you, as you roll it out on a hot platter. Care should be taken not to toughen the top of the omelet with too hot an oven.

DOOR PRIZES GIVEN

Door prizes were given every day of the school, and each day included a clock, a casserole, and four cook books of the Turlock Women's Club. One day the prize list included the entire meal cooked in the Tappan range oven during the demonstration. On the last day of the school the range on which the demonstrations had been made was auctioned, and proceeds above its cost went to the Women's Club.

Looking to the day when Turlock's high school girls will be doing the cooking for the community's homes—and determining the community's attitude toward its gas company—the cooking school featured an essay contest with its central theme the fact that "It can be done better with gas." Prizes were offered, the bridge lamp for first place going to Gladys Pope, a senior. Her essay brought out the fact that of Turlock's 1050 homes, 988, or 93 per cent, are gas consum-

(Continued from Page 42)

ers. Modern features of Tappan ranges and Welsbach water heaters, which were used in connection with the school, came in for mention. Gas was described as an agent for "regulation of household duties," and the modern gas appliance was heralded as the solution to many a household problem.

In Turlock, as in many another community, the gas company is faced with the competition of cheap electricity, which gains added force in the fact that electrical rates in

TEAR OFF HERE AND BRING WITH YOU
Free Gift Drawing
Tear Off and Retain this Stub
No. 2530
Free Gift Drawing
TURLOCK WOMEN'S CLUB
TURLOCK UNION HIGH SCHOOL
FREE 4 DAY COOKING COURSE
Prizes awarded each day to the holder of the lucky number.
You must be present to win.
Name
Address
No. 2530
You are Invited to attend as our Guest
a 4 day Cooking Course
STARTS
NEXT TUESDAY
October 18th
Enjoy This Series of Lessons on Modern Methods in Cooking and Baking
By Special Arrangement we have secured the Well Known Authority
MISS WILLA CAMPBELL, Director
Home Service Bureau, The Tappan Stove Co.
for a Course of Four Entertaining Lectures on Better Cooking
Reserve These Dates
October 18-19-20-21
TUESDAY, WEDNESDAY THURSDAY, FRIDAY
2 to 4:30 P. M.
Turlock Union High School Auditorium
Attend the first one and you will be sure to complete the series
The lessons are of high character—practical and educational. The lecturer will give you the benefit of very wide experience—including menu planning, and the modern time and energy saving ways of preparing food for every day meals as well as company dinners and luncheons for special occasions. Actual cooking and baking will be in process during the classes. Copies of recipes and instructions will be presented to each guest.
Come, invite a friend. Bring your Cooking and Diet Problems.
FREE Attractive gifts given to holders of winning numbers. Awards made daily.
MUSIC BY RUBY'S ORCHESTRA
Held under the auspices of the
TURLOCK WOMEN'S CLUB
TURLOCK UNION HIGH SCHOOL
TURLOCK GAS CO.

Coupon circular used to draw Turlock women to cooking school.

Turlock are set by the local irrigation district, which owns the power and water system. Therefore the company is overlooking no bets in its steady campaign for appliance sales and gas "prestige" in Turlock. The cooking school has been developed into a first class asset, and is depended upon to bring the gas company favorably into "front page" prominence in Turlock—as well as producing direct returns in sales leads. No direct selling is attempted during these schools, as it is felt that this would detract from the educational appeal; but the company representatives were there, contacting the people and working with the Women's Club for sales leads, to be followed up later. A similar school held in Turlock several months ago resulted in a good number of range sales in the months ensuing, and the same follow-up methods will be used after this school.

Another cooking school, directed along the same lines as that in Turlock, is now under way in Madera, a near-by community. A. A. Caldwell, local manager for the gas utilities in Turlock and Madera, is "sold" on the merits of the cooking school for his type of company.

SOUTH HAVEN, KAN., HAS NEARBY SOURCE OF SUPPLY

South Haven, Kansas, is being supplied with gas piped from a gas field three and one-quarter miles east of Hunnewell. The contracts are held by the Kenokla Company and the South Haven Gas Company.

FOSHAY IN SILVER STATE BUY

The W. B. Foshay Company of Minneapolis purchased the Otero County Gas Company of La Junta, Colorado, about October 1st. F. J. Keys has taken charge as local manager. The Otero Company, which serves La Junta, Swink and Rocky Ford, is Foshay's first Colorado property.

T. C. N. PLANS SERVICE FOR NEW MEXICO TOWNS

The T. C. N. Oil Company of Denver has obtained a lease with option to purchase the Aztec Oil syndicate's gas distributing system of Aztec, N. M. The gas for heating, lighting and power would be supplied from the T. C. N. Company gas well six miles south of Aztec. A franchise to supply the city of Farmington, New Mexico, with natural gas has been secured by the same company.

TEXAS PLANT OF NEW TYPE NOW BUILDING

Construction of a natural gasoline plant in the Amarillo, Texas fields has been begun by the Sobri Company of Brussels and New York. This plant will be the first in the United States to employ tetraline (tetrahydro-napthaline) as the absorbing medium instead of the usual absorption oil. It was designed by J. H. Bregeat, French authority in the solvent recovery field. The initial capacity will be 5000 gallons daily. Dr. E. Kroch of the Sobri Company has charge of installing the equipment.

OKLAHOMA GAS UTILITIES CO. FORMED IN CHICKASHA

Organization of the Oklahoma Gas Utilities Company by John B. Nicklos, discoverer of the Chickasha gas field, has been announced. The new company will own and control the gas production and the future oil and gas rights formerly owned by Mr. Nicklos as an individual, in the Chickasha field. Gas will be supplied wholesale by the Oklahoma Gas Utilities Company to the Oklahoma Natural Gas Company, the Midwest Gas Company, the Rush Springs Gas Company, Anderson and Pritchard Oil Company and its subsidiary, the Little Nick Oil Company, and the Southwestern Power and Light Company. General offices will be maintained at Chickasha, Oklahoma, and management of the company will be in the hands of Mr. Nicklos, as president and treasurer.

The Passing *of* Public Ownership

(*Continued from Page 24*)

i. e., a violent seizing of authority and the carrying out of the new policy by force. Thus a democratic government, if it goes importantly into business operations, must complete the cycle by dictatorship; perhaps many years of despotism must then ensue before a bloody revolution may again bring democracy. The following quotations from a reprint of a Saturday Evening Post article by Kenneth L. Roberts show rather vividly what it was that brought Mussolini:

> "Just before the end of the war 546 communist agents, or propagandisti, from the city of Milan alone had railway passes and were busily engaged in spreading the doctrines of communism through the entire country.
>
> "In 1919 they (the mails, telegraphs and telephones) lost 79,000,000 lire. In 1920, they lost 279,000,000 lire. In 1921 they lost 471,000,000 lire; and in 1922 they lost 522,000,000 lire. It was the same old story of political jobs . . . and of frequent yielding to demands by a timorous and vote-hungry government.
>
> "From the end of the war until the middle of 1922, therefore, Italy was pushed deeper and deeper into trouble by the millions of employees of the government-owned railways, telephones, telegraphs, tramways, electric light lines and cooperatives of all sorts, by their reckless demands for favors, by their increasing boldness in enforcing these on the timid government. . . . ."

Can one any longer doubt that the words "government-ownership" should be turned around; that the real meaning is "ownership-of-the-government?"

Great Britain: A generation ago we used to hear wonderful stories from Great Britain about the successes of municipal ownership, particularly in Glasgow. Incidentally, the same Professor Mavor who wrote "Niagara in Politics," initiated, while still a very young man, the municipal ownership of street car lines in Glasgow. Many years later Professor Mavor pointed out, in a two-volume biography entitled "My Windows on the Street of the World," the human reasons that explained the failure of the various municipally owned enterprises of Great Britain to show efficiency or to refrain from oppression.

Professor Hugo Meyer, formerly of the department of Political Economy, University of Chicago, in his scholarly book entitled, "Municipal Ownership in Great Britain," published in 1906, points out among other things the inevitable tendency of political-ownership toward autocracy.

Time will not permit the quotation from Prof. Meyer of various instances of official oppression. Today British authorities generally agree that British municipal-ownership accounts for much of the British failure to keep up with America industrially.

Canada, some years ago, went into an ambitious program of political-ownership of railroads. The Dominion premier who fostered the scheme told Parliament that the entire projected railroad system from Moncton to the Pacific would cost the country about $13,000,000. Premier Drury of Ontario a few years later said, "and then it cost about $356,000,000." Financial losses, however, are unimportant. The vital thing is the domination of the government by its supposed creature. While domination of this sort has controlled the province of Ontario for many years it does not appear that political-ownership is yet extensive enough to control the Dominion of Canada, although the national railroad system has already furnished political issues in elections. The wiser Canadians now see where they have been drifting and are trying to back up before it is too late.

Australia and New Zealand have experimented with political-ownership for years, and some of you know of the stagnation, of the failure to grow in population and in industry, that has resulted from the domination of the government there by the various groups of political-ownership beneficiaries.

The United States: Coming to our own country, we find that a violent attack of political-ownership was experienced in the period of 1830 to 1850. We seem today to be convalescing from a relatively less violent attack of the same disease, marking the second passage of this particular comet. Professor Henry C. Adams in his book, "Public Debts," published in 1887, devotes a chapter to the earlier of these two cycles. He says:

> "The purpose for which the States employed their public credit has been suggested in a previous chapter. Canals and railroads claimed the attention of the North; turnpikes and banks flourished in the South."
>
> "Michigan was admitted into the Union in January, 1837, and it might be imagined, from the proceedings of her early legislatures, that the purpose for which she sought the privileges of a State was to build canals, railroads, and turnpikes, and to improve rivers and harbors."
>
> "The total extent of these works entered upon by the first (Michigan) legislature amounted to 1100 miles of highway, of which 557 miles were to be railroads, 231 canals, and 321 improvements of rivers. The population . . . was . . . 175,000. . . . the legislature projected one mile of improvement for every 150 of the inhabitants . . . "

Other states having mortgaged themselves for similar schemes, an era of repudiation of state debts necessarily followed and the reaction upon the creditors is shown by a quotation given by Prof. Adams from the London Times of that day, which speaks of the America of that time as—"from Maine to Florida, as one vast swindling shop."

Prof. Adams says:

> "The financial disasters which we have described were followed by a reaction in public sentiment against State management of internal commerce, and, as is usually the case, this reaction showed strength proportional to the strength of the policy against which it was aroused."

Had political-ownership sentiment been a small part as violent in California in 1922 as it was throughout the nation in 1830-1850 it cannot be doubted that the first "Water and Power Act" would have been passed by an overwhelming vote. A similar national sentiment in 1924 would have elected Mr. La Follette president on his political-ownership platform. We note then that our second cycle of this particular kind of radicalism was not so severe as our first cycle. We as a nation did remember something, although not the whole, of what experience had taught us.

Mr. La Follette's whole campaign for the presidency was based upon government-ownership, and, while he carried no state except his own, and while his national movement is now realized to be hopeless, a considerable number of minor La Follette leaders still conduct smaller and more localized campaigns from time to time, such as Boulder Dam, Mussel Shoals, etc. It is encouraging to observe, however, that such would-be leaders do not now usually dare to disclose their real government-ownership object, but are forced to claim to advocate this or that scheme not because it means political-ownership, but for some other alleged reason. Frequently such men thoughtlessly say they are "against government-ownership." A simple experiment will smoke them out. Let a suggestion be made that the government-ownership feature be taken out of whatever scheme is being advocated—every other claimed benefit to be left in. You will find that the same advocates—who say they are "against government-ownership"—will attack their own scheme the moment that government-ownership is taken out of it. This happened conspicuously in the case of the Boulder Dam Bill, which Senators Norris and Johnson tell us would probably have passed last winter had its government-ownership feature been eliminated.

Important recent national phases of government-in-business are:

Government operation of railroads during the war period—which cost the tax-payer one billion six hundred million dollars.

Government ownership and operation of ships, of which Secretary Hoover said in 1924:

> "We paid three billions of the taxpayers' money for a fleet—some part of it was truly for war purposes—but we have written it down 90 per cent in 6 years to $300,000,000; and if the accounts were based upon true costs with interest and depreciation we should find that we are losing over one hundred million dollars of the taxpayers' money a year in operating it. Yet private shipping is earning profits. Nor is this the fault of the Shipping Board; it is inherent in the system."

It is this situation that has made President Coolidge speak so often and so insistently of the desirability of the government getting out of the shipping business.

An example by contrast is furnished by a comparison of the telephone service privately owned in this country and government owned in European countries. We have 70 per cent of all of the telephones in the world. What a contrast of results of the energy and vision of our telephone management with the lack of initiative and enterprise of the governments that mostly control the telephone business elsewhere.

Agitations, frequently municipal in character, that persist after a similar national policy has been discarded, are not peculiar to political-ownership. They are characteristic of nearly all infections. When a violent epidemic subsides it nearly always happens that the disease still persists in certain focal centers. Thus the plague or the cholera, between periods of epidemic, always

exist in particular localities. So it is with political-ownership. Let us look at two or three of the municipal focal centers that carry over between national outbreaks.

Staid Philadelphia began municipal ownership of its gas works in 1841, during the political-ownership epidemic of 1830-1850. Not until 1897 did that city shake off the burden. In the meantime so keen an observer as James Bryce in his "American Commonwealth," referring to the Philadelphia "Gas Ring," said:

> "With so much strength behind them, the Gas Ring . . . became not merely indispensable to the Republican party in the city, but in fact its chiefs, able therefore to dispose of the votes of all those who were employed permanently or temporarily in the other departments of the city government—a number which one hears estimated as high as twenty thousand. Nearly all the municipal offices were held by their nominees. They commanded a majority in the Select council and Common council. They managed the nominations of members of the State legislature. Even the Federal officials in the custom-house and post-office were forced into a dependent alliance with them, because their support was so valuable to the leaders in Federal politics that it had to be purchased by giving them their way in city affairs."

This reads like Professor Mavor on Ontario, Canada, or like Kenneth Roberts on Italy, or like Miss Bloomfield on New Zealand. Political-ownership is everywhere alike; it always means control of elections and domination of government.

A few other municipalities here and there still cling more or less strongly to the political-ownership theory. In Cleveland, Ohio, municipal ownership of the electric business was widely advertised for many years, but now we hear nothing of it. All is quiet. The old municipal electric enterprise still functions after a fashion, but the great corporate system that supplies Cleveland with most of its electricity expanded its business rapidly while the municipal system remained stagnant, so that the presence of the municipal undertaking is now hardly noticed. In Seattle the people are thoroughly tired of their venture into street railways, and while they have not yet reached a full realization of what disservice their municipal electric enterprise has done them, that realization too is coming.

In California we find the two great cities of Los Angeles and San Francisco still toying with schemes for municipal electricity, and we find that Long Beach has lately entered the gas business. The virus of municipal ownership seemed to attack Los Angeles first. It seems probable that Los Angeles is now in the convalescent stage and will have made complete recovery when other focal centers may be getting ready for outbreaks. This theory of the convalescence of Los Angeles is somewhat strengthened by the results of the municipal election of June 7th, 1927, in Los Angeles, at which a proposal to take the electric property of the Los Angeles Gas and Electric Corporation through condemnation proceedings was defeated by a vote of 72,479 to 46,561, while a proposal that in effect authorized the building of a municipal steam plant in violation of the good faith, if not of the technical legal terms, of a contract that was intended to prohibit city steam plants for a term of years, was defeated by 67,611 to 48,671.

Los Angeles has never gone as far as is usually supposed toward carrying out the early promises of its political-ownership enthusiasts respecting electric service. That city indeed did buy the local distributing system and established business of a corporation—making part payment in cash and part payment by contract to buy wholesale power for all city needs in excess of the electrical delivery from the hydro plants that formed a part of the city's aqueduct enterprise. The complete aqueduct enterprise has never been carried through. In consequence neither the proposed hydro plants in Owens River Gorge, nor the Long Valley Reservoir that was to supply plants and city with a regulated water supply, yet exist. Los Angeles therefore is falling behind in electric generation and supplies from its own plants, but little more than one-fifth of the city's total electric needs. Electricity used by Los Angeles in 1926 was supplied as follows:

From city owned hydro plants	22.9%
From the plants of a competing company	23.1%
From a company selling at wholesale to city and to railways	54.0%

San Francisco, about fourteen years ago, secured the passage of the Raker (Hetch Hetchy) Bill, and has been working along rather deliberately at the task of carrying Hetch Hetchy water to that city—a task that apparently will require several more years. San Francisco, however, in the meantime, built a hydro-electric plant and a transmission line reaching to within 40 miles of the city—then woke up to the fact that no provision had been made for selling the electricity. While political-ownership enthusiasts claim this state of facts is a reason why San Francisco should put additional scores of millions of dollars into electric distributing systems, others see the same state of facts as pretty conclusive proof that the city hasn't run its commercial enterprise with much forethought, that city officials aren't competent to take on additional commercial burdens. Since one of the companies that now supplies San Francisco's electricity has helped the city out of the dilemma resulting from failure to plan ahead, and since this company is now using all the municipality's electricity at a satisfactory figure, there seems to be every reason why San Francisco voters should refuse to be stampeded. That such is the voters' present temper may be inferred from the results of the recent San Francisco municipal election in which the voters defeated not only the proposal to take over the property and business of the Spring Valley Water Company, but defeated as well a bond issue to provide extensions to the municipally owned street railway system.

On the whole, a broad over-all survey of the political-ownership situation indicates that its most recent phase is passing; also that its recent phase is relatively less violent than earlier phases. When we compare the failure of the radicals to carry any state except his own for Mr. La Follette running on a political-ownership platform, with the optimism with which political-ownership schemes were undertaken in 1830-1850; when we note that Europe is generally turning from her illusions; when we realize the reaction in this country to government war operation of railroads, to mention of the Shipping Board, to the never ending Mussel Shoals wrangling, etc.; when we note that the radicals are even beginning to lose elections in Los Angeles—then we must realize that the world has indeed made real progress.

Field Headquarters *of* Calif. Gasoline Co.

(*Continued from Page 40*)

edge of the consumption of such products in all vehicular facilities.

METER REPAIR SHOP

Located in one end of this building is the meter repair shop, handling all meters requiring repairs that cannot be handled in the field. Orifice meters are overhauled, rebuilt, calibrated, painted and prepared for re-installation in such condition that they leave the shop and are placed in warehouse stock at 100 per cent of new value. The shop is also equipped with a volumetric prover, similar to those used by the large domestic gas companies, so that iron case meters are accurately calibrated.

Adjacent to the auto repair shop are two open front garages facing one another, approximately 22 by 96 feet in size, capable of storing about 40 cars. These buildings are of the frame and corrugated iron construction, one each for use of company cars and employees' personal cars, during the daylight hours. At nights the employees' section is vacated and is devoted to storage of company cars.

Another structure within the group is the platform built to accommodate machinery parts and small equipment brought in for reconditioning. Across one side of this platform are construction and pipe line department tool rooms, the mechanical department repair shop and storage shed for oxygen and acetylene drums.

Set aside from the balance of the buildings is a change room provided with steel lockers, shower baths and sanitary conveniences for the use of all field employees.

The paint shop is also a point of activity from which materials and equipment incidental to all painting are distributed. Here also all fire extinguishers and other fire prevention equipment are recharged and reconditioned. This shop is well distanced from all other buildings, effectively reducing the fire hazards accompanying the handling of paint materials.

Pipe racks for the storage of line pipe are located along one entire side of the headquarters yard, capable of holding several thousand feet of pipe. These racks are a great convenience, especially where lines are being retired, or newly laid continuously.

STORING HEAVY MATERIALS

Close at hand to this headquarters site there is a heavy material warehouse wherein are stored engines, compressors, pumps and many other types of plant equipment that are removed from time to time in plant dismantling, or discontinuance of a plant's operation. All classes of material removed from plants are brought to this warehouse for salvaging, reconditioning or junking. Unlike most warehouses handling materials of this nature, the work is so organized that material is handily classified and placed in provided areas so that conditions are shipshape at all times.

The entire headquarters site is surrounded by a five-foot wire fence of substantial type with a number of wide gates through which materials may be received or delivered. At regular intervals within the yard and at convenient points adjacent to the fence lines fire hydrants and hose boxes are installed for the purpose of fire protection. Also at frequent locations fire extinguishers and

fire hydrants and hose boxes are installed for the purpose of fire protection. Also at frequent locations fire extinguishers and sand barrels are available for instant use in emergencies.

The drainage of the property is such that no water stands on the surface in any one place during rainy weather, all water being carried off through a drain system that also handles water from the roofs of all buildings. Thus the premises are clean and orderly, rain or shine.

Concrete walks are provided for inter-building travel; the roads within the yard are well oiled and resemble a macadamized road as a result of continuous upkeep.

A wide lawn of Kentucky blue grass flanks the front of the field office and laboratory buildings, and is supplemented by shrubbery and flower beds artistically arranged, so that the field headquarters presents an unusually pleasant appearance though situated in the heart of an oil field.

It is the experience of the California Gasoline Company that through the creation of the field headquarters described above, bringing all field administration under one common roof, a common understanding between all departments of the other fellow's problems has formed a spirit of comraderie that has resulted in a high standard of co-operative effort. This spirit is manifest at all times and has been carried through the organization to the man in the gang.

Co-operative effort is the heart beat of all growing industry, and through such effort the economies involved in operating a centralized field headquarters are reflected directly against the cost per gallon of gasoline manufactured.

MAKING 3,500 GALLONS ON COTTON VALLEY GAS

The Louisiana Oil Refining Company's new gasoline plant is turning out around 3,500 gallons of gasoline daily from a run of 10,000,000 feet of gas. The plant is located in the Cotton Valley field, Webster Parish, and was completed only a month ago.

DISMANTLE GASOLINE PLANT

After dismantling its plant at Huntington Beach the Cienaga Gasoline Corporation, Los Angeles, has shipped most of the equipment to other locations, particularly to the North American Lease near Midway, Calif., which plant now has a 15,000-gallon daily capacity.

WOULD BUILD GAS LINE TO ABSORPTION PLANT

Application has been filed with the Colorado state public utilities commission by the Mountain States Gasoline Corporation for permission to construct a natural gas pipe line from San Francisco creek to Barela in Las Animas county. The company has already built a gasoline absorption plant at the field.

TREATING PLANT FOR LOVELL

The Cross Gas Company is reported to be building a treating plant near Lovell, Wyoming, to remove hydrogen sulphide from Garland Dome gas destined for industrial and domestic consumption in Lovell.

A natural gasoline absorption plant is being constructed by Roxana Petroleum Corporation on its Oxford, Kansas townsite property for the purpose of taking gas from its wells there.

NATURAL GAS GASOLINE OPERATIONS

Compiled by E. T. Knudsen

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and thirty-eight natural gas gasoline plants with a daily indicated capacity of 1,402,700 Thousand Cubic Feet, report a recovery of 42,447,056 gallons of natural-gas gasoline from 28,958,523 thousand cubic feet of gas treated in September. This is an increase of 2,187 barrels in Daily Average Production.

Utilization of natural-gas gasoline amounted to 976,329 barrels, an increase over August of 125,918 barrels. Daily average utilization of 32,544 barrels was 1,144 barrels less than Daily Average Production of 33,688 barrels.

Stocks of natural-gas gasoline at the end of September amounted to 783,007 barrels of which 31,813 barrels were reported by natural-gas gasoline plant operators and 751,194 barrels by refinery operators. This is an increase of 34,315 barrels over August stocks. This stock figure of 783,007 barrels is approximately twenty-four days supply at the current rate of consumption.

Production of gasoline during the month of September amounted to 5,149,639 barrels, a daily average of 171,655 barrels. This is an increase in total production of 198,878 barrels or 4.02 per cent over August output and an increase of 1,105,481 barrels or 27.34 per cent over the output of September 1926.

Of the total gasoline produced 33,432 barrels were reported as finished gasoline produced by natural-gas gasoline plant operators. Production of gasoline from Cracking Processes decreased in September to 191,124 barrels.

Stocks of gasoline show a decrease of 131,175 barrels during September and at the end of the month amounted to 10,903,405 barrels. This stock figure includes 31 barrels of finished gasoline reported by natural gas gasoline plant operators.

CALIFORNIA NATURAL GAS GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS

September, 1927

PRODUCTION

Type of Plant	*Gas Treated M.C.F.*	*Natural-Gas Gasoline Produced Gallons*	*Gasoline Recovery Per MCF Gas Treated*
Oil Absorption	18,256,332	27,331,211	1.497 Gal.
Compressor	245,040	383,635	1.566 "
Combination Comp. and Oil Asborption	9,818,961	14,699,733	1.497 "
Charcoal Absorption	638,190	20,751	.033 "
Drip	.....	11,686	.....
TOTALS	28,958,523	42,447,056	1.466 "

Finished Gasoline produced at plants—33,432 Bbls.

DISTRIBUTION

Stocks First of Month		Bbl.	748,692 Bbl.
Production during Month		"	1,010,644 "
Quantity Mixed with Crude or Unfinished Oils	202,899	"	
Used in Blending at Refineries	622,458	"	
Stocks end of Month	783,007	"	
Used at Plants, Shortage and Evaporation losses	14,742	"	
Balance	136,230	"	
	1,759,336	"	1,759,336 "

STOCKS

Natural-gas Gasoline held by Natural gas Gasoline Plant Operators	1,336,146	Gal. or	31,813 Bbl.
Natural-gas Gasoline held by Refiners	31,550,148	Gal. or	751,194 Bbl.
Totals	32,886,294	Gal. or	783,007 Bbl.

Finished Gasoline (Motor Fuel) held by Natural-gas Gasoline Plant Operators—31 Barrels.

MORE COMPRESSOR CAPACITY AT BREA-OLINDA STATION

The Southern California Gas Company on November 1st put into operation two additional compressor units at Station "J" in the Brea-Olinda field. This brings the total station capacity to 16 million cubic feet a day.

MAY OFFER TO BUY MIAMI CITY GAS SYSTEM

The Miami City Power and Water Company of Miami, Arizona, has made a survey of the properties of the municipally owned gas plant at Miami, anticipating making an offer for their purchase. If the sale is consummated, the company plans a consolidation of the Globe and Miami plants and an extension of service to Lower Miami and Claypool.

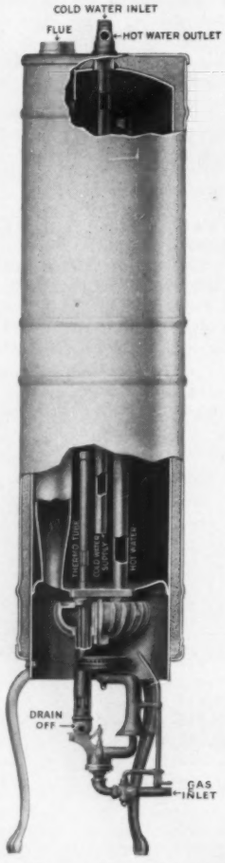
SAFETY IN NATURAL GASOLINE INDUSTRY IS BUREAU PROJECT

As a continuation of a general study of accidents in the petroleum industry, the United States Bureau of Mines has undertaken an investigation looking toward the bringing about of safer conditions in the natural gasoline industry. A study of accident statistics for the California petroleum industry revealed that a rather high percentage of accidents occurred in natural gasoline plants. The Bureau has collected considerable data for a report on the hazards of natural gasoline manufacture, and has made an analysis of the accidents that occurred during the past few years. Considerable time has been spent on designing equipment that should tend to reduce hazards for the men employed, while at the same time providing for efficient operation of natural gasoline plants.

SUPERBO
AUTOMATIC
STORAGE
WATER HEATERS

Manufactured in Los Angeles
Since 1914

Superbo
"Commodore"



Detachable Steel Cell
Heating Unit

No. 18—18 gallons.....$55.00
No. 26—26 gallons.....$65.00
No. 35—35 gallons.....$95.00

Prices F. O. B. Factory

Manufactured by
Superbo Mfg. Co.
Los Angeles California

Institutional Advertising

(Continued from Page 30)

up as the result of a temporary abundance of natural gas in certain localities and the general cheapness and availability of money for investments of this nature, rather than because of the opportunity for abnormal profits.

If any public utility needs to keep its customers and the public informed regarding its business, the service it renders, the costs, both financial and human, involved in rendering the service, it is the natural gas business, for "where understanding is, there also wisdom sits in judgment."

I think it must have been with some of these problems in mind that your program committee asked me to talk on the subject of "Institutional Advertising." Strange to say, the public service industry most needful of institutional advertising—the natural gas business—has been the most backward in its use.

Now what do we mean by institutional advertising? For the most part we use the term "institutional" as descriptive of that form of advertising which has to do with the dissemination of information relative to the history of our business, the various departments of the business, their relation to each other and patron's service, the policies and methods of the utility, as opposed to strictly merchandising, or sales promotion advertising. In other words, "institutional" advertising is contemplated to build up good will for the utility through the creation of better understanding of the business.

THE CLASSES TO BE REACHED

In the preparation of "institutional" or informative and educational copy these three classes of people, who are directly interested in the business, must be taken into consideration:

1. The stockholders
2. The general public, and
3. The patron.

The stockholder is primarily interested in the utility from the standpoint of his investment, its present and future earning power and security, the general ability of its management and the conservative policy of its operation.

The general public, whether a stockholder or customer, or neither, has a definite interest in the utility by reason of its relation as a public servant, its municipal and state privileges, to the end that the service rendered shall be in proportion to the franchise rights and privileges granted.

The patron is interested in the service rendered; that it be adequate for his desires, and within the reasonable limitations of his ability to pay for same. The understanding and appreciation of the utility and the service it renders on the part of its patrons is to our mind the most important consideration of any utility; for a satisfied clientele will go a long ways toward keeping the utility on a satisfactory earning basis and in good favor with the public and the regulatory bodies, while a dissatisfied clientele will quite frequently bring the utility's financial structure under a cloud and place it in ill-favor with the public, regardless of the strength of its finances and the thoroughness and efficiency of its operations.

"Institutional" advertising, therefore, is brought face-to-face with the problem of appealing to three classes whose interests are more or less at variance, or so would seem.

The stockholder may be interested in the dollars invested in the business, the magnitude of its operations. He is interested in the good service of the company and the good will it enjoys, at least, to the extent that his dividends are not impaired. Advertising constructed from his point of view might be as so much dynamite exploded in the consciousness of the patron who pays the bills and the general public who grant the franchise.

Likewise, advertising directed to the general public might be most disastrous to the stockholders' and patrons' good will.

It would seem that the function of "Institutional" advertising must necessarily contemplate simultaneously the interests of all those concerned with or affected by the operations of the utility.

FINDING COMMON GROUND

This being the case then what sort of advertising, how shall it be prepared and to whom should it be addressed? Inasmuch as the stockholder, the individual member of the public group and the patron, each is a human being, we have a common ground upon which to appeal to them—*we will advertise to people.*

Advertising that is not chiefly concerned with people is almost bound to fail.

The perpetuity of the Christian religion is due largely to the fact that it is a personal religion; it has appealed to people; it has fulfilled their desire for spiritual solace, down through the ages. The Bible and the Christian ministry are in a sense an advertisement of, or a pointing the way to—a state of spiritual comfort. In what I believe is one of the greatest pieces of "institutional" advertising ever promulgated, Christ said of His Heavenly Father's home, "In my Father's house are many mansions"—not how many million of dollars were invested in them, or how many years it took to build them, or how many thousands of men were engaged on the job—the "pulling" statement, the statement which has tugged at the desiring hearts of countless millions, is, "I go to prepare you a place there." How simple, yet impelling is this statement of the Savior's. Its power lies in the fact that it strikes into the age-long desire of mankind for a definite hope of salvation.

Most advertising failures can be charged to the fact that those responsible for the copy have been more concerned with the institution advertised or its product or service, or with the publicity and its form, than with people and their desires.

Frankly, people are not interested in the dollars invested in our business—they are not interested in the service it renders—except as the investment and the service satisfy their desires.

"If you analyze the life of a man you will find that it consists chiefly of his ideas," says Richard Surrey, one of our most preeminent advertising authorities.

"Take everything away from a man that he possesses and he will still live and retain ideas. His ideas are the last thing he sheds as he passes out of life."

"Shakespeare has stated this bit of human psychology in these two couplets:

"'There is nothing either good or bad, but thinking makes it so.'"—Hamlet.

"'All things are ready if our mind be so.'"—Henry V.

Men have always realized that the thought

on the "state of mind" is the essence of existence.

"Advertising should not deal with the products or services. It should deal with activities or states of mind, with safety, with health, recreation, amusement and so on. These are not dead things put up in tons at so much a dozen. They are living things, or rather living thoughts."

It is the "wants" of a man that inflcence him more than his "needs."

Everybody needs food, but they do not eat just the food they need; they eat the food, as often as possible, and sometimes too often for good health—that they like and want because it satisfies not only their physical appetite but their mental desire.

So it is that they invest in our securities, not only because they want to own stock or bonds, but because the ownership satisfies some condition of mind for saving, for income for old age, etc., or they are favorably inclined to our business because they believe that it is conducted in accordance with the best interests of all concerned; or they are pleased with the service, and the rates charged for same, because that service satisfies their desire or want of comfort, or safety, or health, etc.

Value is never in the product sold or in the service rendered; it is in the mind of the customer.

APPEALING TO "A STATE OF MIND"

Then in our institutional advertising, whether in newspapers, bill enclosures, or whatever form it takes, it seems to me that the impelling motive should be to appeal to the state of mind, the desire, the wants of our patrons, our stockholders and our public; to show them how our service enters into and enriches their lives; how our securities offer them the solace of a comfortable old age, etc., how our operations intimately aid and influence the orderly progress of civilization and community development—offering the concrete facts about the investment in our business, its physical efficiency, etc., merely as the background, the reason for our ability to fulfill these human desires and wants.

The best test of advertising that I know of is to confront your advertising program with these questions:

Does my advertising expect people to step out of the stream of their lives and take a personal interest in my business?

Or does this advertising step out of my business into the stream of other people's lives and take a personal interest in their states of mind?

Any advertising is better than no advertising, but I believe if we adopt the latter course we will find that our advertising is more accurately "hitting home" and more nearly accomplishing the desired results.

SOVIET BUYS ROBINSON ORIFICE FITTINGS

The Robinson Orifice Fitting Company of Los Angeles recently made its third shipment of the year to the Baku oil fields of southern Russia, the shipment being composed of 125 orifice fittings weighing approximately 25,000 pounds and ranging in size from 2 inch to 12 inch. These purchases have been made by the Amtorg Trading Company, the purchasing arm of the Russian Government in this country.

W. M. BERRY MOVES OFFICE

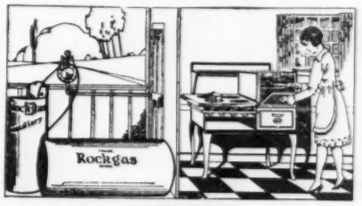
Walter M. Berry, Los Angeles, consulting gas engineer, has moved his office from the Los Angeles Gas and Electric Building to Room 730 in the Petroleum Securities Building.

The Cleveland Trencher Company

"Pioneers of the Small Trencher"

20100 ST. CLAIR AVE.
Cleveland, O., U.S.A.

Pave the way for gas extension by installing



TRADE
"ROCKGAS"
MARK

in places where natural or artificial gas is not available

ROCKGAS will give temporary service in localities where gas mains are to be laid; also permanent service in the event that lines are not anticipated in the locality of installation. It is a form of pure natural gas and comes in convenient sized tanks of various sizes from a tank holding the equivalent of 3,000 cu. ft., 500 b.t.u. gas and 12x37 in. in size to tanks holding the equivalent of 44,040 cu. ft. of 500 b.t.u. gas, of much larger size. Used in thousands of homes, camps, etc.

Distributors Wanted for Some Sections of California

Write us for full and interesting details

Imperial Gas Co.
1871 Cherry Ave., Long Beach, Cal.

The Maximum Service from Gas

A HOT water installation consisting of a Copper boiler and Brass pipe, being rustproof, enables the gas to give the best of heating service, uninterrupted and consistent — hence greater satisfaction and consequently greater sales of gas.

COPPER & BRASS
RESEARCH ASSOCIATION
25 Broadway, New York

Chas. C. Moore & Co. Engineers, Inc.
CONTRACTORS FOR COMPLETE PLANTS

High Grade Machinery

The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water metering heaters
Cochrane feed water softeners (hot and cold processes)
Cochrane steam and oil separators
Cochrane flow meters
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
Leslie reducing valves

And All Power Plant Auxiliaries

Address our nearest office for catalogs and complete information

Home Office: SAN FRANCISCO, Sheldon Bldg.

New York City, Hudson Terminal Bldg.
Los Angeles, Central Bldg. Portland, Gasco Bldg. Seattle, L. C. Smith Bldg.
Salt Lake City, Kearns Bldg. Honolulu, T. H. Phoenix, Heard Bldg.
Vancouver, B. C., Standard Bank Bldg.

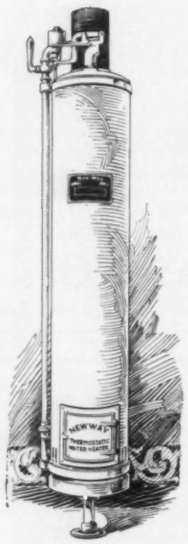
IT IS DIFFERENT
IT STARTS HOT

—

The Economy Way is the

New Way

THERMOSTATICALLY CONTROLLED



—

In the New Way the pilot light heats the water in the coils,—always—there is no reheating of the coils and heater every time the hot water faucet opens.

The New Way saves gas, water and time.

—

Made and Guaranteed by

New Way Manufacturing Company, Inc.

894 FOLSOM STREET
SAN FRANCISCO

Natural Gas Problems *of* South Texas

(*Continued from Page 29*)

the entire producing area and permitting the escape of enormous volumes of gas which continues to blow into the air, until the natural pressure has been reduced to a point where mud and water can penetrate the gas producing formation sufficiently to seal off the gas flow. This condition is generally caused by either drilling into an unknown and unexpected gas sand at a time when the operator is not prepared for the well to come in or by neglecting to keep the mud in the hole sufficiently heavy to overcome the rock pressure, or by improper setting and cementing of the casing, and at other times by neglecting to have proper mechanical appliances on hand and in condition to take care of a heavy gas flow when encountered. This condition is but little more than criminal but continues in spite of legislation, in spite of the supervision of the Oil and Gas Division of the State Railroad Commission and in spite of the fact that the persons interested in the drilling of the gas wells have a financial interest in the marketing of gas produced.

THE OVER-DRILLING EVIL

Another item in connection with the gas supply is that of over drilling the prolific fields . . . . This careless drilling can have but one result, early depletion of the fields nearest and most available to the consumer, and will eventually react by increased costs of production, increased investments in transportation lines with necessarily increased cost to the consumer.

The third problem, that of transportation, comes between the supply and the market and requires the investment of great sums of money. This is made necessary by the geographic location of the present known fields of South Texas, which are generally at remote points far from the larger cities and the greater markets. South Texas, a land of magnificent distances thinly settled, compels the investing company to transport gas long distances through pipe lines of great capacity in order to be able to supply a volume of gas sufficiently large to the consumers to justify the investment in expensive gas compressors and long pipe lines.

PIPE LINE COSTS UNUSUALLY HIGH

Another problem of transportation is unusually rapid corrosion of underground pipe lines, particularly where construction is necessary through salt water swamps. In fact, in one instance the Houston Pipe Line Company in order to avoid this corrosion built several thousand feet of 16-inch high pressure line on trestles constructed of driven piling across sulphur impregnated swamp land. This unusual expense, in my opinion, has proved itself justified by the results. I do not think that any of the pipe line companies in this territory, both oil and gas, have until recently realized the extent of the serious losses entailed from this cause, and there is still not enough consideration given it at this time.

The expense of pipe line construction and operation in this part of the state is increased by the crossing of a great number of streams, creeks, bayous and rivers. The greater part of the entire state drains in this direction, and this is further complicated by the fact that many of these streams are navigable. Some of them are only capable of carrying oyster boats and shell barges, but as the federal government has control of these streams it is necessary to do expensive submarine dredging to the greater depths required by federal authorities. In some cases, for instance the lower part of the Houston Ship Canal, it was necessary to dredge to a depth of forty-five feet below tide and cut a cross section at right angles back for five hundred feet. This was made necessary on account of the possibility of deepening the channel in the future. In this instance, however, the deep dredging was necessary, as ocean going ships in coast wise and foreign trade use the Houston Ship Channel continuously. During the first eight months of this year 2,285 ocean going ships carried cargoes of 6,350,000 tons valued at over $192,000,000 over the lines. Therefore, this type of pipe line construction and operation must be performed in such a manner as not to interfere with navigation. In some cases it is necessary to cross bays and inlets from the Gulf. During the wet months of the year the low flat lands along the gulf drain very slowly and in some districts construction work is brought practically to a standstill and operation difficulties are increased.

KEEPING UP WITH THE GROWTH

We come now to the fourth problem, that of marketing. The usual difficulties are encountered here as they are by the industry in general all over the country. Most of the problems are local but with the added problem of having to keep up with the industrial growth of the districts supplied with gas. The offering of a cheap, efficient fuel in large quantities has caused a number of the industries of South Texas to increase capacity and output of products to an amazing extent. One consuming company alone has expanded to such an extent that it finds economical use for gas up to 35 million cubic feet daily and at the same time has increased its own output to a volume undreamed of previously. This is not an isolated case, but is found to be the general rule in the South Texas districts where gas has been introduced during the past two or three years.

With the ideal climatic conditions in Texas for agricultural purposes and the vast stores of natural resources available for commercial purposes, agricultural and industrial development in this territory has been retarded only because of the lack of cheap transportation and cheap fuel. The Houston Ship Channel with its water rates to all markets of the world has solved for Houston one of the two obstacles to large industrial and agricultural expansion. And with the completion of the intra-costal canal the miles of water front of Texas on the Gulf of Mexico will provide an unparalleled outlet for all Texas products to all world markets at the cheapest possible transportation rates.

AMPLE GAS SUPPLY ASSURED

The advent of three large natural gas trunk lines to the Houston water front has solved the other obstacle to large industrial growth, that of the best and cheapest fuel in the world. With natural gas available in practically unlimited quantities in this territory from the gas fields of South Texas and Eastern Louisiana, Houston bids fair to become the largest industrial section in the southern half of the United States.

Large industries with gas engine driven electrical generators can locate here and fully equip themselves with electric motor driven machinery at an estimated cost of six or seven mills per kilowatt. This is many times cheaper than commercial electric power and nearly as cheap as hydro-electric power.

We now have adequate transportation at reasonable rates and an abundance of cheap, clean fuel and it seems to me that our only problem is to acquaint the commercial interests of the country with our situation and invite them to locate here.

You will note that I have merely tried to define these problems, not to solve them.

CUSTOMER OWNERSHIP RECORD GOOD IN CALIFORNIA

Customer ownership of utility securities, which originated with the Pacific Gas and Electric Company, San Francisco, has been marked by favorable development in California. Supplementing an item published last month in these pages, we quote the last issue of the "P. G. and E. Progress" on the same topic:

"Ownership of the stock of the twelve largest gas and electric companies of California is divided among 207,884 individuals, of whom 183,940, or more than 88 per cent, are residents of California. This was revealed by a canvass recently made by the Pacific Gas and Electric Company.

"Preferred stock of these companies shows an even larger proportion of home ownership, for of the 146,072 holders of such securities 92 per cent are Californians. The average holding of preferred stock is $1,500 of par value per stockholder.

"In local ownership, the Pacific Gas and Electric Company heads the list with $92,352,900 of par value of its stock held in this State. This is exclusive of approximately $2,500,000 worth of common and preferred now being subscribed for on the instalment plan by 3500 of the company's employees.

"Emphasis is laid upon the attractiveness of the securities of local utilities to the people they serve by the fact that of the capital stock of the twelve companies canvassed, Californians own shares of a par value of $241,726,400, nearly a quarter of a billion, an amount greater than all the savings bank deposits of rich States like Indiana and Iowa. And that does not include the millions of dollars worth of bonds of those companies held by California investors."

OIL BURNER MEET

At an October meeting of the American Oil Burner Association's executive board the date for the association's next annual meeting was set for April 3-5, 1928, at the Hotel Stevens, Chicago. Some 25,000,000 barrels of oil are yearly being used for heating purposes, according to an announcement at the directors' meeting.

HOME SERVICE DEPARTMENT ESTABLISHED BY O. G. & E.

A new service to Oklahoma City housewives in the establishment of a home service department has been announced by J. F. Owens, vice-president and general manager of the Oklahoma Gas & Electric Company. The new department will be in charge of Miss Ruth Van Sant, formerly director of the home economics department of the State Normal and Teachers College at Moorehead, Ky.

HELIUM FIND IN KANSAS

Development of a helium gas field in Waubaunsee County, Kansas, is in prospect as a result of the discovery of a light, non-inflammable gas by the American Petroleum Corporation in a recent test for oil in the west edge of Alma, Kansas. The gas was found at a shallow depth and owners in that area are considering drilling several additional wells to determine whether helium can be produced there in paying quantities.

Trillions of Bubbles Absorbing Gasoline

31,129,298,845,840

Figure it out for yourself

In the oil-froth in Campbell Absorbers the maximum size of the bubbles is 1/16 inch. The average size is less. Approximately every five seconds these tiny bubbles break and are reformed. Figuring the bubbles at the maximum size, 1/16 inch, there are theoretically 4096 per cubic inch; 7,077,888 per cubic foot. It is estimated that the total number of bubbles daily produced in a single Campbell Oil-Froth Absorber is over 32 trillion. Over 600 square feet of oil film is exposed in every cubic foot of bubbles. The most thorough absorption is obtained.

Ask for our new catalog.

J. A. Campbell

Consulting—Designing—Constructing

P. O. Box 669 Natural Gas Engineer Long Beach, Calif.

CAMPBELL OIL FROTH absorber

MODEL 10 SERIES
With or Without Mercury Seal

Spring Type
Also furnished in Dead Weight Type

Reynolds Gas Control Since 1892

Products for all kinds of Pressure Reduction—for either artificial or natural gas.

GOVERNORS — Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street.

REGULATORS—High Pressure Service, Low Pressure Service, High Pressure Line, Single and Double District Station.

VALVE—Automatic Quick Closing Anti Vacuum.

REYNOLDS GAS REGULATOR COMPANY
Anderson, Indiana

FIRE BRICK

THIS organization is the largest and oldest maker of Fire Brick west of St. Louis and offers a complete Fire Brick service to the Gas Industry. Standard sizes for—

LININGS—CHECKERS
BOILER SETTINGS

are always carried in stock. Deliveries can be made quickly. If you require special sizes of Fire Brick, our plant is especially equipped to make them. Write or phone us for complete information.

GLADDING, McBEAN & CO.

SAN FRANCISCO LOS ANGELES
SEATTLE PORTLAND

282

The "Beacon"
New Safety Features

Pilot
Safety Control
and
Thermostatic
Safety Control

Have greatly increased the sales of "The Beacon" Automatic Storage Water Heaters.

Made in Four Models

Several sizes in each Model.

Beacon Water Heater Co.
GEORGE F. PEARSE
776 South San Pedro Street
Los Angeles

Governors—
—Automatic
—Balance
—High and Low Pressure
—District
—Reverse Flow
—Fuel Gas
—Service
—Special

Oxide Purifying Material Equipment
Back Pressure Valves
Boosters
Photometers
Unison Telemetric Gauge
Gas Timers
Gauges
Street Department Tools
Gas Tape
Miller Packing

Connelly Iron Sponge & Governor Co.
NEW YORK CHICAGO
C. B. Babcock Co.
135 Bluxome St., San Francisco, Cal.

Electric *vs.* Steam Drive *in an* Oil Gas Plant

(*Continued from Page 27*)

gas, making a total consumption of 124 lbs. per M. cu. ft. of gas made. This makes the total cost of steam at 32 cents per 1000 lbs., the equivalent of oil at $1.25 per bbl. and a 75 per cent boiler efficiency, $158,720 for a year.

The total annual cost will then be for the electric-driven plant $253,200.

Now if steam units were used to drive the equipment in place of motors the total steam requirement would be such that 1750 h.p. in additional oil-fired boilers would be required and the total cost of a self-contained plant would be, including steam units for drive with steam piping on the same basis as the steam-electric plant, $775,000 which at 14 per cent investment and depreciation charges would amount to $108,500 per annum.

The total steam used in place of the 9,500,000 kw. hrs. consumption at the switchboard will amount to some 475,000 M lbs. annually which is 118 lbs. of steam per 1000 cu. ft. of gas. The steam consumption has been assumed at 50 lbs. per kw. hr. which amounts to only 37 lbs. per indicated horse power. If anything this is low but it is assumed that fair enomony might be obtained from the larger units, thus bringing the average down to this amount with available exhaust steam returned through feed water heater. The total steam consumption per 1000 cu. ft. would then be 199 lbs. and its cost at 32 cents per M, $254,720.

The total annual cost for the all-steam plant will be $363,220.

The saving therefore in this particular plant by the use of electric drive over steam drive amounts to $109,980 per year or 2.75 cents per 1000 cu. ft. of gas made.

Now with $2 crude oil, corresponding to $8 bituminous coal, the saving would be $153,600 more per annum or a total of $263,589 per year amounting to the almost unbelievable saving of 5.3 cents per 1000 cu. ft. of gas made.

This saving of 5.3 cents per 1000 cu. ft. of gas made represents an extreme case inasmuch as the plant in question is furnished with much power for by-product recovery, also additional power is required for carbon water filtration not required in water gas operation.

Further, by the use of steam accumulators allowing the utilization of exhaust steam for process the 53 lbs. of steam now used in this manner might be largely eliminated and the boiler plant installation considerably reduced in size with a proportionate cutting down of the investment charges and steam cost for the steam-driven units.

In the foregoing the steam from waste heat boilers has been considered to be as valuable as that from the oil-fired boilers, its cost being based on the price of oil, the assumption also being that all steam had a ready demand at this value. Now, if we consider this steam to have no fuel cost and that the waste heat boilers are operated without any interruption but for the regular cleaning periods and the periods when down for gas generator bricking; also that there is always a demand for all waste heat steam when available, 396,000,000 lbs. of steam would be generated in this manner, leaving only 100,000,000 lbs. per year to be supplied by fuel-fired boilers with the electric-driven plant, and 400,000,000 lbs. per year with the steam-driven plant.

The costs would be:

For the Electric-Driven Plant

Steam 100,000 M lbs. at 32 cents M	$ 32,000.00
Investment	94,500.00
Total Annual Cost	$126,500.00

For the Steam-Driven Plant

400,000 M at 32 cents M	$128,000.00
Investment	108,500.00
Total Annual Cost	$236,500.00

This shows a saving of $110,000 per year or 2.75 cents per M cu. ft. of gas as before but at much lower total costs in either case.

With oil at $2 per bbl. or $8 per ton for coal the saving would be $167,600 per year or 4.19 cents per 1,000 cu. ft. of gas made.

In addition to the saving in cost of plant and operation the following other advantages may be enumerated:

1. Saving in time of starting up and shutting down a piece of apparatus.
2. Ease of locating machinery at more desirable and sometimes less accessible points.
3. Greater ease of extension to existing equipment.
4. The electric system usually requires less maintenance.
5. The combination of electric and steam plant will allow of the use of higher pressure and higher temperature steam and the use of exhaust steam for process work, with the much greater attendant steam power economy.
6. Easier to regulate motor-driven equipment with no trouble from condensation as with steam.

Southwest Men Meet *in* Houston, Texas

(*Continued from Page 28*)

What are the Advantages and Disadvantages of the Several Methods of Protecting Gas Service Lines?

What Results Have Been Obtained in Protecting Steel Pipe Lines From Soil Corrosion?

What Is Being Done to Further the Sale of Gas Engine Gas?

What Would be the Advantages of Making Industrial Installations on an Installment Payment Plan?

What Is the Best Way to Control High Pressure Gas Wells?

Can an Upper Gas Sand be Mudded off and Later Reclaimed as a Producing Gas Sand?

Third Day: November 2, 1927
9:30 A. M.

Question Discussion—

What are the Advantages of Straightening Valves in Orifice Meter Settings?

Shall the Distributing Company Sell Gas Appliances?

Comparison of Low Pressure and Intermediate Systems of Domestic Distribution.

Gas as an Industrial Fuel Compared with Oil and Lignite.

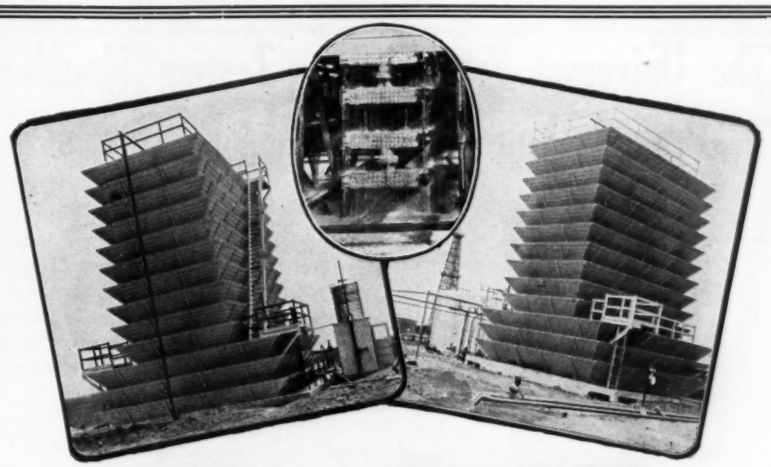
Industrial Gas Salesmanship.

Discussion of Plans for the Annual National Meeting of the Natural Gas Department of the American Gas Association.

Announcement of Committees to Prepare Program and Arrange for the Annual Meeting.

ADJOURNMENT

A twelve-mile distribution system to supply the community of La Sierra, Calif., was completed on October 14th, by the San Bernardino Division of the Southern California Gas Company.



THREE (3) REASONS WHY FLUOR COMBINED TYPE COOLING SYSTEMS ARE ECONOMICAL

LOW MAINTENANCE—Self-scaling coolers never need extensive shut downs for drilling out. Mounted transversely in separate bays of the Fluor tower, they are conveniently reached for inspection while tower is in operation as water can be shut off each bay independently.

LOW PUMPING COST—Cost of pumping water is greatly reduced. In closed tubular apparatus the water friction through the tubes is always high and increases as scale forms after amounting to over 20 lbs. This expensive pressure drop is entirely eliminated in the Fluor open coil system as the total pumping head is only the height of the tower.

LOW FIRST COST—Scientific design has made possible heat transfer rates fully equivalent to any type of cooler. Total cost, therefore, becomes proportional to cost of cooling surface. As expensive cast iron bodies are eliminated, a very considerable first cost saving results.

JACKSON ENGINEERING & EQUIPMENT COMPANY

909 East 59th St., Los Angeles, Calif.
502 National Bank of Commerce Bldg., Tulsa, Okla.

FLUOR REDWOOD COOLING TOWERS

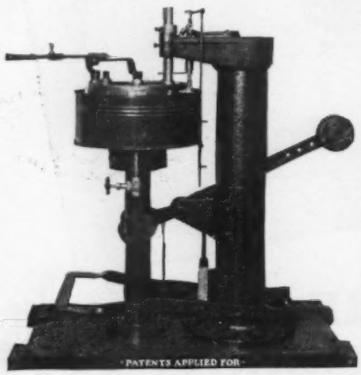
The STRICKLER Ratchet Pipe Cutter

The STRICKLER Ratchet Pipe Cutter automatically cuts cast iron, steel and wrought iron pipe (from 1½ to 30" in diameter) by hand (either in the trench or in the shop).

You can cut any pipe from any position easily. Simply pump the handle and the STRICKLER does the rest. Order your STRICKLER Now

W. W. STRICKLER & BROS.
1475 Oak Street Columbus, Ohio

The Universal Pipe Fittings Testing Machine Protects You on Pipe Fitting Purchases



The Univresal Pipe Fittings Testing Machine is used by leading public service corporations and industrial institutions for testing meter swivels, pipe saddles, reducing couplings, straight and angle valves, tees, ells, crosses and stop cocks.

Its use assures getting exactly what you pay for, and also the installation of fittings that will withstand the pressures of the service intended. It is strong, correct in design and construction and exceedingly fast in operation. Will pay for itself in a very short time.

Built in two sizes—for fittings to 2½-in. and fittings up to 5-in.
Demonstration test made on request

FERNHOLTZ MACHINERY COMPANY

"Leaders Since 1883"

2053 East 38th St. **Los Angeles, California**

Pacific Coast Representative for
W. A. RIDDELL CO., Successors to
Hadfield-Penfield Steel Co., Bucyrus, Ohio
Crossley Machine Co., Trenton, N. J.

Oliver-Borden Thickners and Oliver Filters

The most efficient and satisfactory method of dewatering

Lampblack

Oliver Continuous Filter Co.

SAN FRANCISCO
503 Market Street

NEW YORK
33 West 42nd Street

LONDON
11 Southampton Row

JOHANNESBURG, SOUTH AFRICA
E. L. Bateman, Locarno House

OAKLAND, CALIF.
5th & Madison Sts.

HONOLULU, T. H.
W. A. Ramsay, Ltd.

Natural Gas *in the* A. G. A.

(Continued from Page 28)

as committee work, research activities and participation in meetings are concerned, to tell a natural gas man from a manufactured gas man.

I do not claim that the attitude of the manufactured gas industry is unselfish or that its sole purpose is to give what it knows to the natural gas industry. On the contrary, we know very well that the natural gas division and its members have a very great deal to give their manufactured gas bre.hren. You know a great deal more about a great many things than the men in the manufactured gas field who propose to get them and to make use of them in their own localities. Each side must give and get and as a matter of fact there are no sides left on this proposition. We must and shall, except for classification in order to make the most of the individual's knowledge and opportunities, get out of our heads entirely any separate interest so far as the Association is concerned between natural gas and manufactured gas.

The natural gas field in America has developed most interesting personalities. They have been the men of vision and of daring. It has not been all a matter of luck or of chance, for science has played an important and constantly increasing part. Yet, those who have thought and won in this field have been men unafraid to take a chance and to back their judgment with what they had. No wonder that the manufactured gas people welcomed into their fold these men of strong purpose and high resolve!

Some Comments *on the* Gas Industry

(Continued from Page 26)

ing the iron and steel industries; all bituminous used in railroad shops and one fourth of the remaining railroad consumption except that for locomotive firing.

To this replacement of bituminous coal, add enough gas to replace 75 per cent of the anthracite now used for domestic and industrial purposes, and 75 per cent of the oil now used for house heating and for industrial heat treating. It is estimated that eventually a large portion of the natural gas will be replaced by manufactured gas as the natural gas fields become depleted. Put all of these replacements together and you have a potential market for gas that is within the bounds of possibility and is still about sixteen times greater than the present total output.

But let us narrow the horizon still more to the strictly domestic field. Let us consider only replacement of the coal and oil now used for domestic purposes, including house heating and water heating primarily, and some cooking. Add 20,000 cubic feet per year per domestic customer for refrigeration. This does not seem a dream, in view of the gas using refrigerators already made. These various items will give you a potential market, for domestic consumption alone, of approximately fifteen hundred billions of cubic feet per annum, or more than three times the present total output of manufactured gas for all purposes.

If these estimates are not wholly imaginative—and they do not appear to be—the manufactured gas industry, although more than a hundred years old, is still only an infant industry. It has abundant opportunity to grow, and grow much faster, not only in

the great centers of industry and population, but wherever there is a gas company, provided we all get a clear vision of the gas company's job everywhere, namely: to supply its product for every heating purpose in its community to which gas can be applied.

Increased use of gas in the heat treating processes of industry has already brought large volume sales, or wholesaling up to nearly 30 per cent of the total output. This object lesson, in what can be done, should be a stimulus to attempt still more.

There are difficulties to be overcome and problems to be solved. A natural reaction is to regard many of them as impossible of solution. In the light of what we have already seen happen, as in radio and aviation, and in the gas business itself, my own preference is for the mental attitude recently expressed by Dr. Whitney, Director of Research for the General Electric Company, who is quoted as saying: "Only those things are impossible which we have not yet learned to do."

There are problems of production and distribution, to reduce costs and increase efficiency; problems of utilizing more coal gas to eliminate the oil requirement, and of finding a market for the coke collaterally produced; problems of stand-by plants to insure continuity of supply where quantities of by-product gas are taken from other industries; problems of long distance transmission; problems of load building and business getting, which includes the always important and ever present problem of rate making.

INDUSTRIAL COOPERATION

In tackling some of these problems closer cooperation between the gas and electrical industries should be helpful to both. They are not really competitive. Both are regulated monopoly industries. Both are in the business of selling energy, but they deliver it in different forms. Vast fields for each of them are not yet occupied.

The gas and electrical industries should therefore pull together in ministering to the requirements of other great industries. Where they seem to come into competition, as in some industrial heat treating operations, friendly cooperation should uncover the natural line of cleavage between them, on an engineering and economic basis, so that each may do the work it can do best.

The existence of such a line is indicated by the fact that some of the largest manufacturers of electrical appliances are using great quantities of gas in their heat-treating and fabricating. They are undoubtedly so using gas in response to their own studies of the economic usefulness of it, rather than in response to solicitation by gas men.

My references to the electrical industry in this or other relations do not in any sense imply invidious comparisons. They come naturally from my intensive experience in the electrical industry and from my conviction that the fundamental problems of the electrical and gas industries are identical.

I have frequently referred at other times to the opportunities for cooperation between these two industries and other industries, where large quantities of energy are either required, or are produced by by-products of industrial operations. Only last year, at the annual convention of the National Electric Light Association, I drew attention to this, saying:

"This situation is an inviting one for study in the conservation of energy now wasted and in the economic interchange of energy or its fuel equivalent. It suggests that expansion of the electrical, the gas, the coke and the steel industries should go hand in

Save pipe line dollars!

PIONEER RUBBERTEX applied to your exposed or buried pipe lines:

—resists electrolysis
—eliminates alkaline erosion
—resists acid erosion
—successfully combats crystallization
—will not chip or scale even when frozen
—adds years of service

...all of these protective features are reflected in terms of increased profit to you!

TRY THIS TEST!

Heat some Pioneer Rubbertex to a liquid consistency and flow it onto a piece of sheet metal or pipe. Place the piece of metal on ice and freeze as long as you wish. While both metal and Rubbertex are at this extremely low temperature you can bend the metal or twist it. The Rubbertex will not crack or chip off.

Established 1888

Los Angeles Portland
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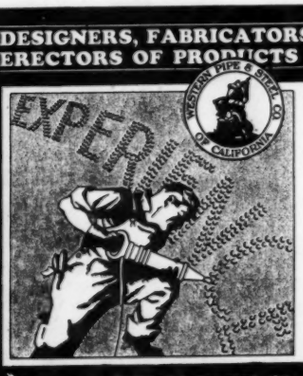
Pioneer RUBBERTEX

Pioneer Manufactures a complete line of Roofing and Building Papers on Sale at Lumber, Building Material and Hardware Dealers

W P & S

DESIGNERS, FABRICATORS & ERECTORS OF PRODUCTS OF STEEL



Investigate WESTERN Hi-Pressure Unit Gas Holders

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA
5717 Santa Fe Ave. LOS ANGELES
444 Market Street SAN FRANCISCO
FACTORIES
LOS ANGELES · SOUTH SAN FRANCISCO · FRESNO · PHOENIX · TAFT

W P & S

JOHNSON

Adjustable Torch and Melting Pot

This is one of the handiest tools on the market for general shop and laboratory use. The large size Bunsen Burner may be adjusted to any angle or removed entirely from the stand and used as a powerful and efficient hand torch. The removable melting pot has a capacity of 25 pounds. Write for full details.

JOHNSON

No. 1 Soldering Furnace

This Johnson Soldering Furnace is inexpensive though powerful and efficient. Equipped with Johnson Atmospheric Bunsen Burner with shut-off valve and pilot light. No blower needed. Will handle six-pound soldering coppers. Also used for heat treating carbon tools. Write for full details.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. Babcock Co.
135 Bluxome Streeet San Francisco, California

MAAS Oxide

Removes the Maximum Hydrogen Sulphide from Gas

A highly potent Commercial Compound developed after careful research and exhaustive tests in the Maas Laboratories and used extensively by Gas Companies for removing Hydrogen Sulphide from gas at low cost with high efficiency.

A R M M

Manufactured by

Arthur R. Maas
Chemist
308 East Eighth St.
Los Angeles, California

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

hand to realize the best economic conditions and the conservation of fuel and energy.

"It may not be out of place to draw attention to another subject which our electricity supply companies and our friends in the gas business might well pay close attention to, namely: low temperature carbonization of fuel. It is well worth our while to spend money on research in this field.

"To those who may be fortunate enough to solve the problem the reward will be great. That the solution will be found within a comparatively few years, I have no doubt. It seems to me safe to predict that ere long, electricity supply companies and gas companies will produce electrical energy and gas, to say nothing of the valuable by-products, under the same roof, from one plant, and from using one class of fuel."

I believe in that today as when I first said it more than a year ago.

Perhaps the gas industry might learn from the electrical industry something of the fundamental economics of massing production and of long distance transmission. The electrical industry has made great progress in this field. I believe development in the gas industry along similar lines is coming.

With due allowance for distance limitations, I can see no reason why the massing of production in economical plants centrally located, and transmission over considerable areas, should not be quite as feasible for gas as it is for electricity. It is simply a matter of applying competent engineering and accurate arithmetic: engineering to provide adequate production and transmission facilities; arithmetic to uncover and prove the economic factors.

INTERCONNECTION OF GAS SYSTEMS

We already have the beginning of this in the Chicago district. The Peoples Gas Light and Coke Company system in Chicago is connected with the Northern Indiana Public Service Company system across the state line and with that of the Public Service Company of Northern Illinois, which supplies much of the suburban territory beyond the Chicago city limits.

In long distance transmission, the natural gas companies are already piping their product 300 miles and a line of more than 400 miles, with a daily capacity of 100,000,000 cubic feet is in prospect. In Germany, as far back as 1913, Stinnes coke ovens were delivering gas 270 miles from the point of origin. Transmission of coke-oven gas from the Ruhr Valley to German cities 450 miles away is now proposed. Over in northern Indiana, we have 187 miles of inter-community lines, all of it under one management and most of it in one system.

Study of long distance transmission must lead naturally to a study of the important economies which can be effected by coupling up neighboring gas systems much as electrical systems are tied together by "super-power development. An interesting by-product of this should be, as in electrical "superpower," the extension of gas service to intervening communities where gas service is now economically impossible.

The 187 miles of Indiana gas lines, to which I have referred, traverse a territory with a density of population and of use that is simply not comparable with that of a metropolitan area. Yet the venture is so successful that we regard it, not as finished, but as only a good beginning. In the light of our experience with it, one of the important plants on the line never would have been built, if we had it to do over again.

Another principle, first learned in the elec-

trical industry, is the influence of load factor and diversity of demand upon the balance sheet. This principle is peculiarly applicable in the gas industry, when load characteristics are adequately studied.

Take house heating, for example. The house heating peak with us comes in the early morning. The peak of our present total load comes between five and six o'clock in the evening on week days, and at noon on Sundays and holidays.

On account of this diversity in the hourly demands of the two loads, we find that we can take on house heating to the amount of 40 per cent of our present total sales for all purposes, with steady improvement in the hourly load factor. Beyond that point, the effect of house heating upon hourly load factor would start the other way. But the hourly load factor of the entire system would not get back to where it is today until the house heating load alone exceeded the total load today for all purposes.

Of course the year-around 24-hour load factor would be reduced by a large house heating load. But if summer loads can be developed in water heating, refrigeration, brick making, cooling of homes, perhaps, and so on, the all-year load factor will be improved. This means that we can afford to take such other seasonal off-peak business at a low rate and utilize otherwise idle production and distribution equipment.

Our studies of load characteristics also indicate that we can supply a large volume of gas at low rates to industrial customers who agree to use little or no gas between 10 A. M. and 2 P. M. on Sundays and holidays. This is attractive to industrial users whose plants are always closed on Sundays and holidays. It is attractive to the company because it improves the load factor of the total business. Under such conditions of sale, we can increase our industrial sales by 50 per cent of the present total without increasing the maximum one-hour demand on the system, and an industrial load of this size would increase the hourly load factor of the entire system from 32 per cent to 44 per cent.

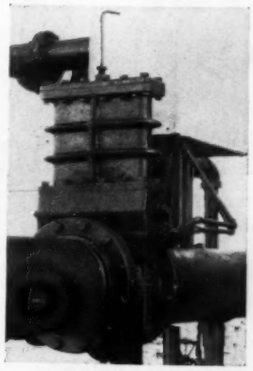
GAS INDUSTRY NEEDS SOUND RATES

Studies of this sort will be found valuable in directing the new business activities of a gas company. They must of course go hand in hand with rate making studies, for the importance of recognizing certain rate making fundamentals cannot be over-emphasized.

In this particular, again, we can profit by the experience of the electrical industry. In my judgment, that industry would be nowhere near where it is today, after only 45 years of existence, if it were not for its early recognition of this sound economic principle, namely: that the customer who uses the company's service, and therefore its investment, the greatest number of hours per day per year is entitled to the lowest rate.

Application of correct rate making principles is vital to the new business activities of a gas company. But here again mental attitude is important. The natural inertia of human nature, if left to itself, is apt to suggest that certain classes of business cannot be taken on because the company has no rate low enough to get the business. That is the wrong mental attitude in which to approach the problem. The correct line of approach is to determine, first, whether the business is one for which gas is properly usable; and if it is, then set about making a rate that will get the business at a profit.

In my judgment, the greater increase in the sale of electricity, as compared with gas,



Over 8000 in Use

IN THE three years since the ROBINSON Orifice Fitting was introduced its sale has increased at a truly remarkable rate. Many of the country's great gas companies have made it standard equipment in place of the antiquated, expensive by-passing arrangement around orifice meters. Don't delay your investigation of the ROBINSON'S many and exclusive advantages—there is nothing like it. Ask for list of users.

ROBINSON ORIFICE FITTING COMPANY
1435 SANTA FE AVENUE - LOS ANGELES, CALIFORNIA
California Distributors:
Westcott & Greis, Inc., Los Angeles; Jensen Instrument Co., Los Angeles
Mid-Continent Distributors:
B & A Specialty Co., Tulsa, Houston; Westcott & Greis, Inc., Tulsa, Dallas

ROBINSON ORIFICE FITTING

Stockton Fire Brick Company

FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

High Grade Refractories for

GENERATOR LININGS
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OFFICE:
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Stockton,
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A. G. A. Approval
An Asset in Merchandising
PAYNE FURNACES

The Payne Furnace Company is one of the first Furnace Manufacturers in the United States to receive this A.G.A. Approval.

The customer of today is looking for additional values. That's why A. G. A. Approval is an asset in merchandising Payne Furnaces. When you say to your prospect, "The Payne Is Approved," you have drawn to your assistance a new selling force. You are offering a furnace that for fourteen years has stood the actual test of performance in more than thirty thousand installations. . . . A furnace which complies with the specifications established by the U. S. Bureau of Mines, the U. S. Public Health Service, the U. S. Bureau of Standards and the Testing Laboratory of the American Gas Association.

PAYNE FURNACE & SUPPLY CO. INC.

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Branch: 3810 Broadway, Oakland, Calif.
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C. B. Babcock Company

"We Serve"

135 Bluxome Street
San Francisco, California

2132 Atlantic Street
Los Angeles, California

in the last quarter of a century, has been due mainly to three factors:

First—General recognition by electrical men of the fundamental economics, which, as I have said, are identical in both industries.

Second—The higher type of salesmanship applied in the electrical industry, and consequently keener effort to get new business.

Third—Intensive research and experimenting, at great expense, for the development of electrical appliances.

Lack of adequate expenditure by gas appliance manufacturers, for research and experimenting, has been, in my judgment, a great obstacle to large-percentage increases in gas sales. I blame the gas manufacturers more than the appliance manufacturers for this in the past. How could one expect the development of apparatus for large-volume consumption, when the basis of rate-making was to charge each user the same unit price, regardless of his use of the investment—a basis that was an absolute barrier to large-volume sales?

In taking this position, I am but repeating the position taken again and again in the early days of the electrical business, when appealing for changes in the method of charging for energy. The danger of incorrect charging still exists in the gas business, I believe. The industry as a whole seems not yet entirely converted to the economic principle involved.

Sales-efforts for large-volume increases are mostly wasted when that principle is ignored. By applying the principle with the aggressive campaigning for new business, the electric people have earned their large-percentage increases. Inquiry will show that the electrical industry still spends far more for sales promotion than the gas industry does.

If these comments on the gas industry have seemed to be critical, my comments in years gone by have been no less critical of the electrical industry, in which most of my life has been spent. In this industry, as in that one, my mental attitude, although critical, is never pessimistic.

Whatever success I have had in the gas industry has come by following the same economic principles that I have followed in the electrical industry. I intend to keep at it on the same basis. What has proved to be right in electricity must prove to be right in gas; for the economic principles are the same in both.

The vitality and stability of the gas industry have been tested and proved by time. It has successfully weathered profound adversities—a revolutionary change in the decline of its lighting load; an economic cataclysm during the World War. Yet it is today stronger than ever. If it believes in itself as I believe in it, then its best years are still to come.

CHANGES IN LACLEDE PUBLIC RELATIONS PERSONNEL

Vincent M. Carrol, for several years director of public relations for the Laclede Gas Light Co., St. Louis, has been appointed assistant to the president of the Southwestern Bell Telephone Company. R. D. Lewis, who has been assistant to Mr. Carrol, succeeds him as director of public relations with the Laclede company.

SAN ANTONIO EXTENSIONS

Six thousand feet of 12-inch high pressure main feeder line has recently been laid within the city limits of San Antonio, Texas, by the San Antonio Public Service Company, to insure a more adequate supply of gas for the domestic and industrial loads.

Feature Seasonal Appeal

(*Continued from Page 37*)

tions of different items for each member of the family, and then these memorandums, "Wife—All-White Gas Range, Family—new Fireplace Heater." From each of these lines run red ribbon twined with holly to a display of these two appliances at either side of the window."

IV

"In a living room scene center a glowing radiant gas heater, and arrange football paraphernalia around, pennants of local team, head guards and heavy sweaters. Display a card reading, 'After the game, warm up before a gas radiant heater'."

The Chicago Convention

(*Continued from Page 25*)

Gas Light and Coke Company of Chicago came in for a vote of thanks in a convention resolution, for the invaluable co-operation they rendered in staging the Chicago meetings.

Another resolution passed reiterated the member companies' stand on the Testing Laboratory program, recommending the display and sale of Approved appliances, requesting gas companies to notify appliance manufacturers of their support of the Laboratory program, and deploring and disapproving the manufacture or marketing of appliances in classes already submitted to test, that do not quality with A. G. A. Laboratory standards.

Exhibits of gas burning appliances and of gas service equipment at this convention were without precedent in gas convention history. They taxed the space facilities of the Stevens to the limit, overflowing the basement onto two other floors of the hotel. There were 228 separate exhibits this year.

It is impossible to give any detailed mention of the splendid sectional programs put on during the Chicago meetings, excellent as they were. The three general sessions were held in the Eighth Street Theatre, and standing room was at a premium on a number of occasions. Some highly inspirational messages were heard in these general session conferences, that of Samuel Insull, which appears on another page of this issue, being one of the highlights.

EXECUTIVES' SYMPOSIUM

Of outstanding interest was the National Symposium of Public Utility Executives, which came Wednesday afternoon, sponsored by the Publicity and Advertising Section. P. H. Gadsden, vice-chairman of the Joint Committee of National Utility Associations, gave a key-note address on the Committee's purposes, affirming in vigorous terms that the utilities' story, as opposed to any "socializing" movement directed at the utility industry, would be taken direct to the people of the country.

A formal place was accorded women of the A. G. A. this year in a special women's meeting of Thursday morning, in which were treated such topics as "Employee Education," "Home Service," "The Versatile Utility Woman," etc.

Inspections of some of Chicago's industrial gas installations, among them the Deering and McCormick and West Pullman Works of the International Harvester Company, were arranged as a part of the Industrial Gas activities of the convention, and an Industrial Gas Sales Conference was also held on Monday evening, October 10, in addition

KEY *Special* PIPE JOINT COMPOUND

Water-Proof

KEY SPECIAL PIPE JOINT COMPOUND will effectively seal screw thread and gasket joints for such service as Gas, Water, Steam, Compressed Air, etc.

One of the many advantages this compound has over the commonly used red leads and oils, etc., is that the pigment will not settle to the bottom of the container, thereby holding the contents in equal suspension at all times ready for service.

KEY SPECIAL PIPE COMPOUND is not a quick hardening cement but a plastic lubricant and filler that will seal the most obstinate joint with ease.

You may test the high quality of this product by taking a small quantity between the fingers which will immediately demonstrate the wonderful lubricating qualities along with the "pull or drag" that makes possible a permanent seal without resorting to cementing materials, most of which are very undesirable and impracticable to use.

Write for **FREE** Sample

E. A. Key Co., Inc.
1431 Santa Fe Ave.
Los Angeles, Calif.
Portland Seattle
San Francisco
Denver El Paso

The Magic Way Company

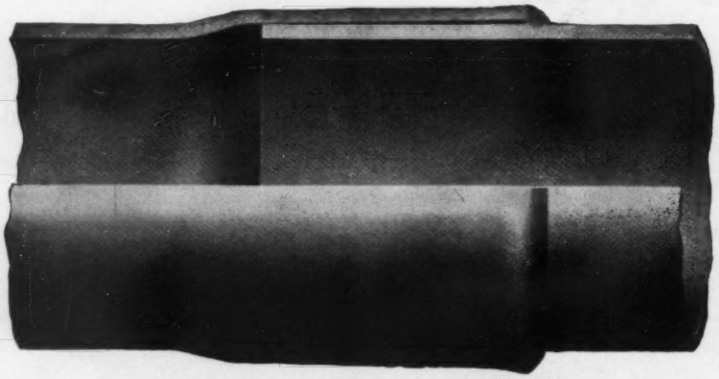
Gas Heating Devices

including

"Magic Way" Gas Furnaces
"Magic Way" Control Valves and Switches
"Potter" Radiators
"Steel Made" Radiators
"Cole" Floor and Wall Heaters
"Hall" Floor Furnaces

Manufactured by

Magic Way Company
National City San Diego California



In the Major Considerations of Pipe Line Essentials

"ASTCO" SEAMLESS STEEL LINE PIPE

Is Pre-eminent

In the consideration of pipe line essentials, first cost is of minor importance. Major considerations are: Laying costs; Maintenance costs; Economy over a period of years; Factors of resistance to corrosion and pressures from within or without. In the major essentials, "Astco" Seamless Steel Line Pipe stands pre-eminent. It has demonstrated this over a period of years in all parts of the world and will continue to render uniform and consistent endurance and economy as long as steel is used in making pipe.

Astco Seamless Steel Line Pipe is pierced from solid billets of Siemens-Martin Steel of high carbon content. Welding goes easier and faster and the joints are stronger. Made in all diameters and lengths averaging 40 ft. Complete stocks for immediate delivery. Literature mailed on request.

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535 5th. Ave. New York City

STRENGTH RESISTANCE ASTCO DURABILITY

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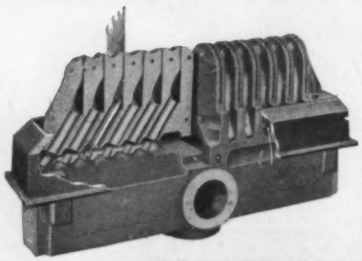


THE FINAL SOLUTION OF YOUR HEATING PROBLEM

ROTARY MANUFACTURING CO.

5720 Long Beach Avenue Los Angeles, California

to two regular sessions of the Industrial Gas Section.

As a departure in the Technical Section's program, there were two chemical parallel sessions held by the chemical committee this year.

On Friday the Peoples Gas Light and Coke Company arranged a special trip to the Chicago By-Product Coke Company's plant, which produces gas exclusively for the Peoples company.

Chicago proved a hospitable host to convention attendants, and the convention program itself held a number of entertainment features, chief of which was the President's Reception on the evening of October 11. Dancing followed the reception, and also featured two other evenings of the convention. Ladies of the convention were afforded a sight-seeing trip with tea following at the Edgewater Beach Hotel, and a luncheon at the Hotel Drake. Golf privileges were extended to A. G. A. delegates at the Westmoreland Country Club and the Olympian Fields Country Club.

FRARY MANAGER AT MIAMI

Oren F. Frary of Miami, Arizona, has recently been appointed manager of the Miami gas plant by the city council of that city.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

Required by the Act of Congress of August 24, 1912, of *Western Gas*, published monthly at Los Angeles, California, for October, 1927.

State of California, County of Los Angeles, ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the Publisher of *Western Gas* (magazine), and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher—Jay Jenkins, Los Angeles, Calif.
Managing Editor—Geo. H. Finley, Los Angeles.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Western Business Papers, Inc.
Jay E. Jenkins, Los Angeles, Calif.
James E. Jenkins, Los Angeles, Calif.
Geo. H. Finley, Los Angeles, Calif.
H. Elliott Taylor, San Francisco, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are non, so state.)
None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.).

JAY JENKINS, Publisher.

Sworn to and subscribed before me this 22d day of September, 1927.
(Seal) GLADYS L. KRAFFT.
(My commission expires June 28, 1929.)

PANHANDLE NATURAL GASOLINE OUTPUT DROPS IN SEPTEMBER

Production of natural gasoline in the Texas Panhandle field for the month of September shows a decline of 84,000 gallons as compared with the total manufactured gallonage for the previous month of August. September production amounted to 7,387,000 gallons. Production during the month of August was reported as 7,471,000 gallons.

The Phillips Petroleum Company, Bartlesville, Okla., is the largest single manufacturer, turning out about half of the field's total production. Skelly Oil Company and Marland Refining Company come next in the order named.

There are at present twenty natural gasoline plants in the Panhandle field. All but a few thousand gallons of the total production is being shipped from the field by tank car.

"GOLD IN THEM THAR HILLS" FOR SO. COUNTIES SALESMEN

The sixteen salesmen of the Southern Counties Gas Company, Los Angeles, Calif. who recently established an enviable record in the sale of 562 Welsbach automatic storage water heaters during a thirteen week's period, are started off on another race. This time it involves the sale of Humphrey Radiantfire and Welsbach space heaters.

The Radiant Heater Gold Race started on September 19th and closes December 17th. During this three months' campaign, the time of the year when heating appliance sales reach a high peak, the sales representatives will strive to sell 3,000 heaters with prizes of $140 in gold going to the winners.

"BILL" JETT MANAGER OF MUELLER SOUTHERN DIVISION

W. L. ("Bill") Jett, for the past 16 years Los Angeles manager for Mueller Co., of Decatur, Illinois, has been promoted to manager of the Southern Division of this company. Mr. Jett has been with the Mueller Company for the past 24 years, and during the past 16 years on the Pacific Coast has made a host of friends in the gas industry, all of whom wish him success in his new position. His territory will include the entire south section of the United States.

HARRY C. KLINE PASSES

Harry C. Kline, sales representative and third oldest member of the George D. Roper Corporation sales organization, died at his home in Chicago on October 1st. Mr. Kline recently underwent a minor operation, complications developing which caused his death.

RATE CHANGES ON UNION GAS CORP. SYSTEM

The Kansas public service commission has passed favorably the recent application made by the Union Gas corporation of Independence, Kansas for changes in the natural gas rate for the cities of Caney, Fredonia, Liberty and Altoona. The new rates which become effective November 1st are slightly above the former rates in effect at Caney and Altoona, and below the former charges in Fredonia and Liberty.

ROOD REPRESENTS AMERICAN GAS PRODUCTS

C. S. Rood has been appointed representative at Los Angeles for the American Gas Products Corporation. Offices are maintained in the Washington Building.

The Reliance Balanced Valve Regulator

An addition to the Reliance line, which for positive lockup, close regulation, large capacity, low cost of upkeep and accessibility will further increase the prestige of the Reliance.

Reliance Manufacturing Company

1000 Meridian Street **Alhambra, California**

WESTERN GAS
626 South Spring Street,
Los Angeles, California .....192.....

Starting with the next monthly issue, you may send WESTERN GAS to the undersigned. Upon receipt of invoice, remittance will be sent to cover (1 year $2.00) or (3 years $5.00).

Name ..... *Title* .....

Company .....

Address .....

City and State .....

Please Check

[ ] GAS COMPANY [ ] GAS APPLIANCES
[ ] NATURAL GASOLINE CO. [ ] MISCELLANEOUS

Subscription: 1 Year, $2.00; 3 Years, $5.00, in Advance

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
Chaplin-Fulton Mfg. Co.
Fluor Construction Co.
Jensen Instrument Co.
The E. A. Key Company
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Abrasives
Abrasive Engineering Corp'n.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
W. P. Fuller & Co.
Hill, Hubbell & Co.

Analyzers
C. F Braun & Co.
A. R. Maas, Laboratories.
Smith-Emery Co.

Annealers (Bar, Blank, Strip)
Pacific Meter Works.

Anti-Fluctuators
Pacific Meter Works.

Apparatus, Experimental Gas
The Alpha-Lux Co., Inc
The Bartlett Hayward Co.
Pacific Meter Works.

Appraisals and Valuations
Charles R. Collins.
Smith-Emery Co.

Automobile Tires
Truck Tire Service Co.

Bags, Gas Main
C. B. Babcock Co.
Connelly Iron Sponge & Governor Co.
Mueller Co.
Safety Gas Main Stopper Co.
Semet-Solvey Engr. Corpn.

Barometers
Jensen Instrument Co.
Westcott & Greis, Inc.

Bench Iron Work
The Bartlett Hayward Co.
General Gas Light Co.

Blast Gates
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Blocks and Tiles, Fire Clay
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Blowers and Boosters
Ingersoll-Rand Co.

Blowpipes
Montague Pipe & Steel Co.

Boiler—Brickwork
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Boiler Equipment
E. A. Key Co.

Boiler Maker's Tools
E. A. Key Co.

Boilers, Gas-Fired
C. B. Babcock Co.
Baker Iron Works.
Montague Pipe & Steel Co.

Boiler Settings, Pipe and Boiler Insulation
Pioneer Paper Company.
J. T. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.
The Bartlett Hayward Co.

Boilers, Water Tube
Baker Iron Works.
Montague Pipe & Steel Co.
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Boxes
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Brass (rods, sheets, tubes, wire)
Mueller Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Brick, Firebrick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Brick, Firebrick—Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Brushes, Wire Pneumatic
Abrasive Engineering Corp'n.
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Burners, High Pressure
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
C. B. Babcock Co.
General Gas Light Co.
Johnson Gas Appliance Co.
Lee B. Mettler.
Payne Furnace & Supply Co.
The Bartlett Hayward Co.
Rotary Manufacturing Co.
Standard Gas Equipment Corp.

Burners—Oil
Rotary Manufacturing Co.

By-product Recovery Apparatus
The Bartlett Hayward Co.
Oliver Continuous Filter Co.
Semet-Solvay Engr. Corpn.

Calorimeter Accessories
Pacific Meter Works.

Calorimeters
The Alpha-Lux Co., Inc.
Pacific Meter Works.

Cases, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Casinghead, Gas Meters
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Casing and Tubing (steel)
Montague Pipe & Steel Co.
Semet-Solvay Engr. Corpn.
South Chester Tube Co.

Casing—Iron
South Chester Tube Company

Cast Iron Pipe
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Castings
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Cement
Abrasive Engineering Corp'n.
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Cement—Plastic
Pioneer Paper Company.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Checker Brick
Abrasive Engineering Corp'n.
American Refractories Co.
Los Angeles Pressed Brick Co.
Semet-Solvay Engr. Corpn.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
The Alpha-Lux Co., Inc.
Pacific Meter Works.
Stauffer Chemical Co.
Westcott & Greis, Inc.

Chemists, Analytical
A. R. Maas, Laboratories.
Smith-Emery Co.

Chimneys, Radial Brick
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Chimneys, Radial Brick Installation
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Chutes (coal, coke, ash)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
C. B. Babcock Co.
Pacific Meter Works.

Coal Gas Plants
Charles R. Collins.
Semet-Solvay Engr. Corpn.
The Bartlett Hayward Co.

Coal Tar Products and Chemicals
W. P. Fuller & Co.
A. R. Maas, Laboratories.

Cocks
C. B. Babcock Co.
Johnson Gas Appliance Co.
Lattimer-Stevens Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Collectors, Dust
Western Pipe & Steel Co.
Semet-Solvay Engr. Corpn.

Compressors, Air
The C. & G. Cooper Co.
Ingersoll-Rand Co.
Oliver Continuous Filter Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.

Condensers
Baker Iron Works.
The Bartlett Hayward Co.
C. F. Braun & Co.
Ingersoll-Rand Co.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Condenser Boxes
Baker Iron Works.

Condenser Tubes
Semet-Solvay Engr. Corpn.

Controllers
Jensen Instrument Co.
The Foxboro Co., Inc.

Controlling Devices, Electric
L. R. Teeple Co.

Controls, Air and Steam
Jensen Instrument Co.
The Bartlett Hayward Co.
C. F. Braun & Co.
The Foxboro Co., Inc.
L. R. Teeple Co.

Cooling Systems
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Cooling Towers
C. F. Braun & Co.
J. A. Campbell
Fluor Construction Co.
J. B. Gill Corporation.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.

Counters, Revolution
Jensen Instrument Co.

Couplings
Pittsburgh Equitable Meter Co
The Bartlett Hayward Co.

Coverings (Tank, Boiler, Cold and Steam Pipe)
Pioneer Paper Company.

Cubic Foot Bottle
Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.

Cutters, Pavement
Ingersoll-Rand Co.

Cylinders, Compressor
The C. & G. Cooper Co.
Semet-Solvay Engr. Corpn.

Dephlegmaters
C. F. Braun & Co.
J. A. Campbell
Southwestern Engineering Corp.
Semet-Solvey Engr. Corpn.
Western Pipe & Steel Co.

Diaphragms, Meter
Chaplin-Fulton Mfg. Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Diggers, Clay
Ingersoll-Rand Co.

Discharging Machines (retort, etc.)
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Displacement System, Tar
Semet-Solvey Engr. Corpn.

Door, Clean-out
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Drills
Ingersoll-Rand Co.
Mueller Co.

Drill Pipe—Iron
South Chester Tube Company

Drill Pipe—Steel
South Chester Tube Company

Dryers
Payne Furnace & Supply Co.

Elevators
Baker Iron Works.

Engineers and Engineering Service
J. A. Campbell
Charles R. Collins.
J. B. Gill Corporation.
The Bartlett Hayward Co.
A. R. Maas, Laboratories.
Smith-Emery Co.
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Engines, Diesel
The C. & G. Cooper Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
The Bartlett Hayward Co.
C. F. Braun & Co.
United States Cast Iron Pipe and Foundry Co.
Southwestern Engineering Corp.

Excavators, Ditch and Trench
The Cleveland Trencher Co.

Exchangers, Heat
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell
Southwestern Engineering Corp.
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Exhausters
Ingersoll-Rand Co.
United States Cast Iron Pipe and Foundry Co.

Experimental Apparatus
The Bartlett Hayward Co.
Pacific Meter Works.

Extractors
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Faucets, Drain
Mueller Co.

Felt—Deadening
Pioneer Paper Company.

Filters
Oliver Continuous Filter Co.
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Fire Brick Contractors
J. T. Thorpe & Son, Inc.
Stockton Fire Brick Co.

Fittings
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Fixtures, Lighting (Domes, Portables, etc.)
C. B. Babcock Co.
Welsbach Company.

Feed Water Heaters
C. F. Braun & Co.
Southwestern Engineering Corp.

Fire Brick
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.
Semet-Solvay Engr. Corpn.

Flanges
Montague Pipe & Steel Co.
Pittsburgh Equitable Meter Co
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Flooring—Industrial
Pioneer Paper Company.

Forgings
Baker Iron Works.
Payne Furnace & Supply Co.
Pacific Gas Heating Co.
Geo. D. Roper Corporation.
J. T. Thorpe & Son, Inc.

Furnaces, Floor
Payne Furnace & Supply Co.
Pacific Gas Heating Co.

Furnaces, Lead Melting
C. B. Babcock Co.
The Estate Stove Co.
Johnson Gas Appliance Co.
Mueller Co.
Payne Furnace & Supply Co.

Gas Analysis Apparatus
The Foxboro Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.

Gas Masks
Safety Gas Main Stopper Co.

Classified Advertising

Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

Situations Wanted

Note: *Western Gas* will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

A successful factory representative of gas appliances, 34 years of age, with splendid record of accomplishment, possessing personality, ability and unusual aggressiveness, on account of wife's health desires to locate in Pacific Coast States, and so wishes to open correspondence with responsible concern with view of making lasting and profitable connection. Successful experience as salesman and division sales manager. Prefer opportunity in sales management or business promotion department. Best of personal, business and financial references. Address Box A-11, care of *Western Gas*.

Home Service Director, employed, desires change. Five years experience with combination companies. In traveling for these companies have used nearly every type of range, gas and electric. Fine success with cookery classes. Since coming East have gone through many of large stove and electrical manufacturing concerns. Address Box A-12, care of *Western Gas*.

NEW CATALOGUE ON YORK GAS RANGE LINE

Abenroth Brothers, Port Chester, N. Y., manufacturers of York gas ranges, have just issued a new catalogue announcing various changes and improvements in their lines. Copies may be had by requesting them from the manufacturers.

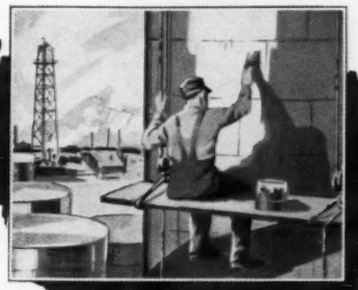
ADD TO POTRERO PLANT EQUIPMENT

A one and one-half million foot steam driven centrifugal exhauster, costing $20,000, and two new catch pits with pumps for the separation of lampblack from the water, costing $20,000 are now in course of construction at the Potrero, San Francisco plant of the P. G. and E.

McALESTER LINE REPLACED

Work on the construction of an eight-mile stretch of 8-inch gas line between Blocker and Gaines creek has been begun by the Southwest Power Company. The line is part of a project to provide the city of McAlester, Okla., with more gas during the winter months, and will take the place of the old 6-inch line which has been supplying McAlester. It will cost approximately $60,000 and require 60 days to complete.

Arco Products~ Complete Protection Above and Underground



PIPE, tanks, derricks and every other piece of equipment of metal construction *need* ARCO protection.

ARCO Metal Paints protect every metal surface *above ground* against the ceaseless, disintegrating effects of the elements.

ARCO Save-A-Line, a tough, elastic, non-cracking, non-peeling, soil-resistive pipe coating, insures complete protection against *underground* moisture and corrosion.

Almost fifty years of aiding oil companies in specifying the right protective paint for each individual job makes us worthy of your confidence. Let an Arco engineer help you.

THE ARCO COMPANY · *Cleveland, Ohio*
San Francisco Office: 523 Rialto Building

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GAS AND OIL DIVISION

Fire Brick Contractors

Established 1906

J. T. Thorpe & Son

Inc.

Specializing in Gas Generator, Boiler, Still and Furnace Brick, Industrial Furnaces, Retorts, Kilns, Brick Smokestacks.

Agents for Kellogg's Radial Brick and Concrete Chimneys
Ignisite—high temperature cement
Bigelow Arches and Water Cooled Walls
Allens Special Shapes

San Francisco	Seattle	Portland	Los Angeles
417 Market St.	939 Stewart Bldg.	632 Ry. Exch. Bldg.	321 W. 3d St.

Gas Main Tapping & Drilling Machines
Mueller Co.

Gaskets
The E. A. Key Company
Pittsburgh Equitable Meter Co
Safety Gas Main Stopper Co.
Semet-Solvay Engr. Corpn.

Gasket Compound
W. P. Fuller & Co.
E. A. Key Co.

Gasometer
Pacific Meter Works.
Semet-Solvay Engr. Corpn.

Gas Pipe Line Construction
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Gauges
The Alpha-Lux Co., Inc.
The Foxboro Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Gauges, Steam
Jensen Instrument Co.
Semet-Solvay Engr. Corpn.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Gauges, U Type
C. B. Babcock Co.
Jensen Instrument Co.
Lee B. Mettler.
Pacific Meter Works.
Safety Gas Main Stopper Co.
Semet-Solvay Engr. Corpn.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Generators, Water Gas
The Bartlett Hayward Co.
Baker Iron Works.
Semet-Solvay Engr. Corpn.

Glassware
Westcott & Gries, Inc.

Governors
C. B. Babcock Co.
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Governor Co.
Pacific Meter Works.
Reynolds Gas Regulator Co.
Sprague Meter Co.
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Hammers
Ingersoll-Rand Co.

Hanger, Meter
Mueller Co.

Hangers, Iron and Steel
Baker Iron Works.

Heaters
C. B. Babcock Co.
Baker Iron Works.
C. F. Braun & Co.
The Estate Stove Co.
General Gas Light Co.
New Way Mfg. Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.
Welsbach Company.

Heaters, Floor
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.

Heaters, Wall
C. B. Babcock Co.
General Gas Light Co.
Pacific Gas Heating Co.
Payne Furnace & Supply Co.

Heat Exchangers
Baker Iron Works.
C. F. Braun & Co.
Southwestern Engineering Corp.
Semet-Solvey Engr. Corpn.
Western Pipe & Steel Co.

Heat Interchangers
C. F. Braun & Co.
Southwestern Engineering Corp.
J. A. Campbell
Semet-Solvay Engr. Corpn.
Western Pipe & Steel Co.

Hoists
Ingersoll-Rand Co.

Holders
The Bartlett Hayward Co.
Baker Iron Works.

Holders, High Pressure
Baker Iron Works.
Western Pipe & Steel Co.

Hoppers
The Bartlett Hayward Co.
Montague Pipe & Steel Co.

Hose, Air
Ingersoll-Rand Co.

Hot Plates
C. B. Babcock Co.
Johnson Gas Appliance Co.
Geo. D. Roper Corporation.

Hygrometers
Jensen Instrument Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Incinerators
C. B. Babcock Co.
Baker Iron Works.
J. T. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Incinerator Brickwork
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Indicators
Westcott & Greis, Inc.

Instruments (Measuring, Testing and Recording)
The Alpha-Lux Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.
The Foxboro Co., Inc.
Semet-Solvay Engr. Corpn.
Westcott & Greis, Inc.

Insulating Materials
Beacon Water Heater Co.
W. P. Fuller & Co.
Pioneer Paper Company.
Stockton Fire Brick Co.

Joint Runners Asbestos
Safety Gas Main Stopper Co.

Kilns
J. T. Thorpe & Son, Inc.
Western Pipe & Steel Co.

Kilns—Brickwork
The Bartlett Hayward Co.
J. N. J. Firebrick Co.

Laboratory Supplies
Mueller Co.
Westcott & Greis, Inc.

Ladles, Hot Metal
Mueller Co.

Lamps
C. B. Babcock Co.
General Gas Light Co.
Welsbach Company.

Lighters
C. B. Babcock Co.
Tappan Stove Co.

Lighting Incidentals
C. B. Babcock Co.
Welsbach Company.

Line Pipe—Iron
South Chester Tube Company

Line Pipe—Steel
Amer. Seamless Tube Corp.
South Chester Tube Company

Linings—Brickwork
J. N. J. Firebrick Co.
J. T. Thorpe & Son, Inc.

Linings—Car
Pioneer Paper Company.

Main, Bags
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Mains, Street
United States Cast Iron Pipe and Foundry Co.

Main, Stopper
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Mantles, Gas Lighting
C. B. Babcock Co.
General Gas Light Co.
Welsbach Company.

Manometers
J. A. Campbell
Jensen Instrument Co.
Lee B. Mettler.
Westcott & Greis, Inc.

Meters, Air
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Boiler
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Meters, Burner Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Cast Iron Gas
The Bartlett Hayward Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meter Connections
Lattimer-Stevens Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Complaint
Pittsburgh Meter Co.
Pittsburgh Equitable Meter Co

Meters, Consumers
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Flow
The Foxboro Co., Inc.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Meters, Fluid
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Gas
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Gasoline and Oil
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Meters, High Pressure Distribution
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Pacific Meter Works.
Sprague Meter Co.
The Foxboro Co., Inc.

Meters, High Pressure Iron Case
The E. A. Key Company
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Industrial Consumers
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The Foxboro Co., Inc.

Meters, Iron Case
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Laboratory
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Large Capacity
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Oil
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Orifice
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Robinson Orifice Fitting Co.
Westcott & Greis, Inc.

Meters, Oxygen
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Oxygen and Hydrogen
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Prepayment
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meter Seals
Lattimer-Stevens Co.

Meter Shelves
Lattimer-Stevens Co.

Meter Swivels and Caps
Lattimer-Stevens Co.

Meters, Station
The Bartlett Hayward Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Meters, Steam
Jensen Instrument Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Meters, Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Water
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Meters, Wet Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Mixers, Gas and Air
C. B. Babcock Co.
Geo. D. Roper Corporation.
Pacific Gas Heating Co.

Oil Condenser Sections
Semet-Solvay Engr. Corpn.

Oil, Diaphragm
Pacific Meter Works.

Over Heat Control
The Wilcolator Company

Oxide
C. B. Babcock Co.
The Alpha-Lux Co., Inc.
A. R. Maas, Laboratories.
Stauffer Chemical Co.

Packing, Asbestos
Safety Gas Main Stopper Co.

Paint
The Arco Company.
Everlasting Paint & Sales Co.
W. P. Fuller & Co.
Pioneer Paper Company.
Hill, Hubbell & Company.

Photometers
Pacific Meter Works.

Pilots
Payne Furnace & Supply Co.
The Wilcolator Company

Pipe
Amer. Seamless Tube Corp.
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.
Western Pipe & Steel Co.

Pipe Compound
E. A. Key Co.

Pipe, Copper
Mueller Co.

Pipe Covering
Hill, Hubbell & Company.
Pioneer Paper Company.

Pipe Cutters
W. W. Strickler & Bros.

Pipe—Iron
South Chester Tube Company

Pipe—Steel
Amer. Seamless Tube Corp.
South Chester Tube Company

Pipe Coils, Bends, Van Stone Joints, Gasketless Flange Joints, Welded Nozzle Headers
Semet-Solvay Engr. Corpn.

Pipe Jointers
Mueller Co.

Plugs (testing mains and running service)
C. B. Babcock Co.
Jensen Instrument Co.
The Foxboro Co., Inc.
Safety Gas Main Stopper Co.
United States Cast Iron Pipe and Foundry Co.

Pre-Heaters
Baker Iron Works.
C. F. Braun & Co.
J. A. Campbell
Southwestern Engineering Corp.
Western Pipe & Steel Co.

Producers, Gas
Semet-Solvay Engr. Corpn.
United States Cast Iron Pipe and Foundry Co.

Provers, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Pumps
C. B. Babcock Co.
Ingersoll-Rand Co.
Mueller Co.
Oliver Continuous Filter Co.
Pacific Meter Works.
Geo. D. Roper Corporation.
Safety Gas Main Stopper Co.

Purifiers
Baker Iron Works.
The Bartlett Hayward Co.
Semet-Solvay Engr. Corpn.

Purifying Materials
The Alpha-Lux Co., Inc.
C. B. Babcock Co.
Connelly Iron Sponge & Governor Co.
A. R. Maas, Laboratories.
Stauffer Chemical Co.

Purifiers, Oil Absorption
Western Pipe & Steel Co.

Pyrometers (Indicating and Recording)
Jensen Instrument Co.
Westcott & Greis, Inc.

Radiants
American Refractories Co.
C. B. Babcock Co.
General Gas Light Co.

Radiant Heaters
C. B. Babcock Co.
General Gas Light Co.
Pacific Gas Heating Co.
Welsbach Company.

Radiators, Gas-Fired
Pacific Gas Heating Co.

Radiators, Gas-Steam
Pacific Gas Heating Co.

Ranges
C. B. Babcock Co.
Detroit Vapor Stove Co.
The Estate Stove Co.
Geo. D. Roper Corporation.
Standard Gas Equipment Corp.
Tappan Stove Co.

Ranges, Closed Top
C. B. Babcock Co.
Geo. D. Roper Corp.
Standard Gas Equipment Corp.
Tappan Stove Co.

Receivers, Air
Ingersoll-Rand Co.
Montague Pipe & Steel Co.
Western Pipe & Steel Co.

Recorders
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Refrigerating Machinery
C. & G. Cooper Co.
Ingersoll-Rand Co.

Refractory Materials
Abrasive Engineering Corp'n.
The Alpha-Lux Co., Inc.
American Refractories Co.
Los Angeles Pressed Brick Co.
Stockton Fire Brick Co.

Regulators, Heat
C. B. Babcock Co.
Arthur F. Erickson Co.
Payne Furnace & Supply Co.
The Foxboro Co., Inc.
L. R. Teeple Co.
The Wilcolator Company

Regulators, High Pressure
C. B. Babcock Co.
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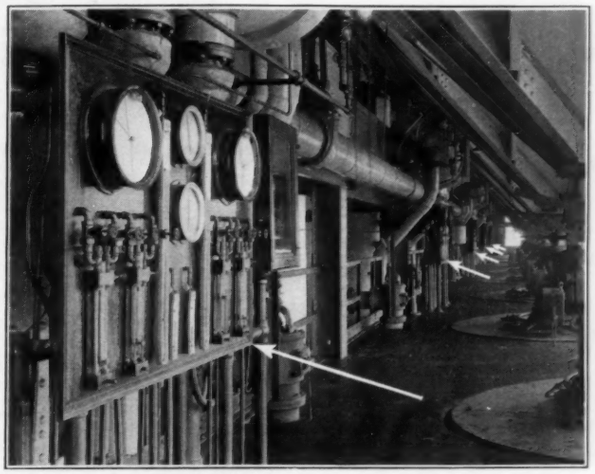

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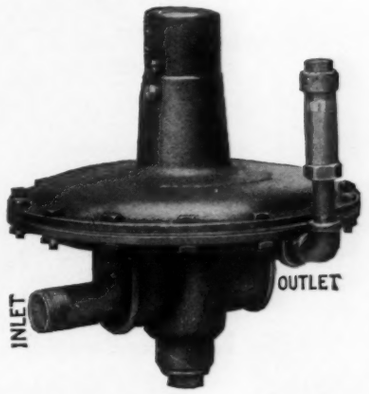

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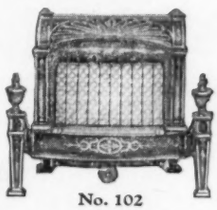

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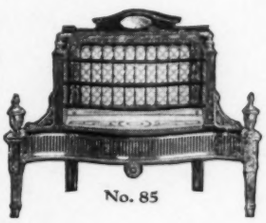

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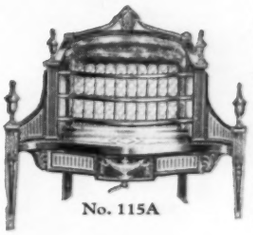

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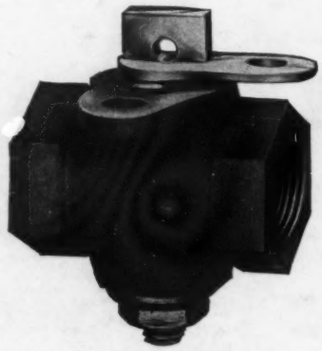

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